Imagine a Great Airport

DIA was designed to be Denver’s port to the world.

As with many great public work projects, the idea for Denver International Airport sprang from need. In the early 1970s, farsighted community leaders were already envisioning a larger airport to accommodate Denver’s burgeoning growth. Stapleton Airport, which had opened as Denver Municipal Airport in 1929, was virtually landlocked and nearing its capacity, with noise pollution and flight delays becoming increasingly contentious issues.

The search for a new site began, culminating in the acquisition of 53 square miles of farmland in neighboring Adams County. Denver annexed most of this property, an enormous political challenge that required the astute guidance of business and civic leaders, and, ultimately, approval by voters from both counties. Building DIA was a seminal event that raised Denver’s collective consciousness by showing how big dreams can be realized.
An airport is a reflection of a community and its spirit. Denver International Airport has come to symbolize many things about our region: architectural ingenuity, technological innovation, visionary planning and – perhaps most important – our community’s belief in itself and confidence in its future. Although metro Denver ranks as the 20th-largest metropolitan area in the US, DIA served more than 51 million passengers in 2008, ranking as the fifth-busiest airport in North America and the 10th busiest in the world. Colorado Department of Transportation estimated DIA’s annual economic impact to the state at more than $22 billion dollars, while accounting for over half of the state’s total aviation jobs. DIA is truly the most important economic engine in the state of Colorado.

Encompassing 53 square miles of land, DIA is the largest airport in North America and the second-largest airport in the world. This large land area is designed to limit the impacts of airport activity on the airport’s neighbors and provides room for the airport to expand and grow. The enormous potential of DIA to serve a prominent role in the global aviation system is due primarily to the airport’s room to grow. DIA is part of a larger plan for the landlocked city of Denver, opening the path to markets around the world and providing a stimulus for economic growth in the region. The very foundation of Denver’s role as a world-class city is Denver International Airport.

For four consecutive years (2005 to 2008) DIA has ranked as the top airport for business travelers in North America.
What is a Master Plan?

A master plan is one of the most important documents from an airport management and operation perspective as it guides future growth and development. An airport master plan provides a road map for efficiently meeting aviation demand through the foreseeable future while preserving the flexibility necessary to respond to changing industry conditions. DIA’s current master plan was developed in 1988 and provided guidance for the airport through 50 million annual passengers. With that threshold now reached, DIA management is in the process of updating the master plan. The new plan will provide development guidelines through 2030.

DIA’s Master Plan Update is funded in part by a grant from the FAA, with the remainder of the study funded by Denver International Airport. No taxpayer monies are involved to pay for the master plan study.

The goal of a master plan is to build the overall framework needed to guide future airport development. The plan must also allow the airport to keep pace with aviation growth cost effectively, while also considering potential environmental and socioeconomic impacts. Master plans also provide the airport with the tools to react to uncertainties by examining key trends in the aviation industry, such as changing airline business models, improvements in technology, and local/regional economics that could affect airport activity.
Why Update the Master Plan?

DIA's original master plan, which was completed in the late 1980s when airport construction initially started, projected that the newly built facility could support approximately 50 million annual passengers. In 2007, the airport handled 49.9 million passengers, and, in 2008, annual passenger traffic topped 51 million. Even as we face a downturn in the economy – and passenger traffic – there is a great need to plan for DIA's future.

Aviation has changed tremendously over the past 20 years when DIA's current master plan was developed. These changes include increased security measures and processes, an evolution in airline check-in procedures, baggage screening technology and regulations, evolution of airline fleets, and changes in airline and aviation industry economics. These changes have resulted in different and typically more intensive demands on airport facilities. The Federal Aviation Administration recommends that airports review and update their master plan every five to 10 years or as necessary to ensure future planning accounts for these changes. DIA's master plan study will consider these factors in order to develop an expansion plan that meets projected demand, both in magnitude and characteristics, while providing flexibility for the airport to respond to future changes.

Additionally, DIA was originally designed to handle a significantly higher number of connecting passengers than current levels. The proportional increase in originating and terminating passengers has imposed more demand on airport facilities than would have the same increase in the number of connecting passengers, since "local" passengers use roadways, parking facilities, airline ticketing and baggage facilities, security checkpoints, and other facilities that connecting passengers do not.
Key Considerations

There are numerous elements that must be balanced to develop a master plan that will meet the dynamic needs of DIA’s varied stakeholders.

Key considerations for developing DIA’s master plan:
- Ensure safety and security
- Keep costs practical and affordable
- Maintain consistency with DIA’s vision, mission and goals
- Maintain consistent and coordinated development that matches city and regional development plans
- Minimize impact to current operations
- Optimize operational efficiencies and flexibility
- Emphasize customer service and satisfaction
- Allow airport to respond to the changing needs of the dynamic aviation industry
- Continue to support DIA’s role as the key economic engine for the region and the state
- Meet sustainability and environmental requirements and continue DIA’s leadership in environmental stewardship
- Reserve and maintain land uses on-airport to permit logical, phased development that is both flexible and responsive
- Allow the airport and its terminal to remain architecturally iconic
- Allow for enhancement of nonairline revenue
The development of an airport master plan generally takes three years from start to finish. At the end of the process, the FAA will grant approval, allowing the airport to move forward with development plans. As demonstrated here, public input begins early on and continues throughout the process. Denver Mayor Hickenlooper also convened a Master Plan Advisory Committee which includes representatives from all stakeholder groups including government, businesses, airlines, and community organizations.

**Master Plan Process**

**STEP 1**
Initial Technical Evaluation of Needs
- Inventory
- Forecasts
- Analysis
- Coordination with FAA

**STEP 2**
Detailed Technical Analyses
Identify Needs
Stakeholder Meetings & Input

**STEP 3**
Alternative Solutions
What are the options to meet our future needs?

**STEP 4**
Preliminary Recommendations
- Best options to meet our future needs

**STEP 5**
Final Stakeholder Meetings

**STEP 6**
FAA Approval of Airport Layout Plan (ALP)
- EIS Scoping

**Concept Evaluation and Recommendation Process**

Step 3 of the master plan process includes concept evaluation and recommendation. The process is depicted graphically below.

Stakeholder input begins in step 2 and continues through step 5.
DIA is one of the most efficient airports in the world due to the vision of the airport’s original planners.

Situated on 53 square miles of land, DIA currently has one terminal building, three concourses and six runways. DIA planners designed enough room between concourses to allow two wide-body aircraft to push back from opposite concourses while two more aircraft taxi between them. The pinwheel layout of the airport’s six runways and wide spacing between runways add to the airport’s efficiency. Three aircraft can typically land simultaneously at DIA, even in adverse weather conditions.

Passenger movement also follows a simple flow-through principle. While DIA may seem intimidating to infrequent travelers, everything is arranged in a logical, consistent pattern – from parking to ticket counter to train to concourse. These elements have led to DIA’s ranking as one of the least-delayed airports in the US – good news for both airlines and passengers.
**Airport Activity Forecasts**

**DIA’s annual airport activity is estimated to grow by 20- to 25-percent by the 2015/2020 time period.**

One of the first steps in the master plan process is to develop forecasts of aircraft and passenger activity. To allow the airport to adapt to future changes, several alternate scenarios for future growth at the airport have been examined.

**Base Forecast:** Growth rates reviewed in comparison to FAA’s Terminal Area Forecast: 84-percent growth in passengers and 77-percent growth in operations

**Scenario 1:** High growth rate (compared to the baseline): 108-percent growth in passengers; 98-percent growth in operations

**Scenario 2:** Decrease in hubbing/connecting activity: 64-percent growth in passengers; 60-percent growth in operations

**Scenario 3:** An evolution to a larger aircraft fleet: 84-percent growth in passengers; 64-percent growth in operations

**Scenario 4:** Higher international growth as Denver grows into an international gateway: 103-percent growth in passengers; 90-percent growth in operations

Based on these forecasts, DIA’s annual airport activity is estimated to grow by 20- to 25-percent by the 2015/2020 time period, and by 70- to 100-percent by the 2030/2035 timeframe. This generally translates into a 60- to 90-percent increase in overall facility needs at DIA.
As part of the master plan, DIA has identified short-term needs (2015/2020 timeframe).

These include:
- One additional runway (7 total runways)
- Concourse expansion – 20-plus new gates (total) on any or all Concourses (A, B, or C)
- Additional international passenger processing and gates
- Capacity expansion of the airport people mover
- Baggage system improvements
- Expansion of passenger security screening
- FasTracks rail station
- On-airport hotel
- Parking and rental car expansions

In addition to meeting the short-term needs of airport activity, DIA is taking a longer term view of the airport to plan for activity through the 2030/2035 timeframe. Like visionary planners of the past, we want to prepare the airport for future generations and leave a legacy that can support growth and expanded economic activity.

- Additional runways (9 or 10 total)
- 100-plus additional gates
- Concourse D (2020/2025)
- Concourse E (2030/2035)
- Significant international passenger processing expansion
- Expansion of passenger security screening
- Taxiway improvements
- More aircraft deicing positions
- Potential for doubling of rental car space
- Fourth lane on Peña Boulevard
- Public and employee parking expansion (near doubling)
**DIA’s runway configuration is the envy of the airport industry.**

The airfield design – which includes no intersecting runways – allows for smooth and efficient flow, which reduces delays. As the map here shows, future runways follow the same pinwheel pattern, allowing DIA to maintain one of the most efficient airfields in the world.

To accommodate the forecast growth in air service, a seventh runway will be needed by the 2015/2020 timeframe. DIA has not yet decided which runway will be built next. We will consider several issues before selecting the seventh runway, including:
- Optimization of existing runways and taxiways
- Weather conditions – specifically the coordination of deice pads and snow-removal operations
- Minimization of taxi times and flight times
- Accommodation of new/emerging aircraft types
- FAA Control Tower needs for line-of-sight
Existing Template Expansion Concept
When DIA was first designed, the original long-term concept was for terminal expansion to the south and concourse expansion to the north. This concept remains one of the alternatives for future development. The concept components and related issues follow.
- Telescoping of current concourses to the east and west
- Concourses D and E built to the north
- Second terminal building to the south of current Jeppesen Terminal
- Concerns about capacity and funding of the people-mover and baggage systems
- People-mover remains the must-ride system to all concourses other than Concourse A
Terminal and Concourse Alternatives

East/West Terminal and Concourse Concept
In this concept, a strong central terminal is created for both DIA’s passengers and tenants.
- Includes two new concourses – oriented north-south – one west and a second one east of the current Jeppesen Terminal
- Defers the need for Concourses D and E beyond 2030/2035
- Alleviates the need for an expensive expansion of the people-mover system and new, bigger tunnels for the planning period

South Terminal Concept
This concept provides for a new terminal complex in the existing cargo area south of the current Jeppesen Terminal.
- A new terminal complex could be uniquely branded as an international or a low-cost terminal
- Requires the relocation of most of DIA’s support facilities south of the terminal and will require a people-mover system to connect passengers, employees and visitors to the existing terminal/concourse complex
In addition to runways and terminal/concourse facilities, the master plan will include a review of landside and support facilities. As the airport grows, one of the areas of focus needs to be how to best accommodate demands for these facilities. The review includes:

- Parking (both public and employee)
- Rental car facilities
- A potential Ground Transportation Center (GTC)
- Cargo facilities
- General aviation operations
- Firefighting operations
- Airline and airport maintenance facilities
- The fuel farm

These are all critical elements for DIA’s long-term success, and various alternatives are under review.
DIA is one of the greenest airports in the world.

Colorado is perhaps most well-known for its natural beauty and recreation, and leaders from both the public and private sectors are proactive in protecting the environment for future generations. Denver International Airport has also established itself as a leader in environmental stewardship. In January 2009, DIA hosted the first meeting of the Global Reporting Initiative for international airports. This group – which includes world-class airports such as Munich and Frankfurt – will develop environmental guidelines specific to airports. DIA was the first US airport asked to join this prestigious group.

The following are DIA’s key environmental achievements:
- First international airport in the US to develop and implement a facility-wide Environmental Management System certified to ISO 14001 (2004)
- First airport in the US to be accepted into the US Environmental Protection Agency’s National Environmental Performance Track Program (2006)
- Received FAA Environmental Stewardship Award (2007)

Ongoing environmental initiatives include recycling, the use of alternative fuels, management of the deicing process, and wildlife and wetlands management. In August 2008, DIA installed a two-megawatt solar facility on its land. This facility will generate more than three million kilowatt hours of electricity annually and reduce carbon emissions by five million pounds per year. DIA’s master plan process and future growth will incorporate sustainable principles every step of the way.
At full build out, DIA will have over 300 gates and can accommodate over 100 million annual passengers.

Imagine an airport twice the size of the present one. As one of the largest economic engines for the region and the state, DIA’s growth will continue to propel the Denver metropolitan area as one of the most successful and desirable in the country in the coming decades.

Size is one of the most significant competitive advantages in the global aviation industry. DIA is the envy of airports around the world because of the room to grow to accommodate the dynamic needs of airlines, passengers and stakeholders. The challenge facing current planners is to ensure that this tremendous asset is preserved. This can be achieved through communication, cooperation and coordination with stakeholder groups, including governments, businesses, airlines and community organizations. Ultimately the entire region and state will benefit from the continued growth of DIA.

Fortunately, Denver International Airport is poised to embrace the future. A visionary master plan coupled with experienced, professional management and staff and supportive community leaders and stakeholders will ensure DIA’s place as the jewel in the crown of world-class airports for decades to come. For updates regarding DIA’s Master Plan, please visit www.flydenver.com/masterplan.

Comments can be submitted in writing to masterplan@flydenver.com.

Flight Times from DIA

Note: Times are approximate