Airport Infrastructure

PETER GROSSHUESCH[1]

Aurora, a suburb of Denver with a population of 230,000, is located immediately to the east of Denver, and is in an ideal location to capitalize on development anticipated to occur around the new Denver airport. Within the past five years, the City has carried out an aggressive annexation program in order to better position itself to capture the lucrative tax and employment base that will inevitably develop adjacent to both the new Denver airport, and along the E-470 circumferential freeway alignment.

MODERN GEOGRAPHIC HISTORY

The City was contained geographically by a self imposed annexation boundary, known as the "Blue Line", for a ten year period between 1975 and 1985. The purpose of the Blue Line policy, was to control "leap-frog" development, by providing urban services only to land contained within a sixty-five square mile area defined by the Blue Line.

In the ten years preceding 1985, vacant land in the City had developed at a very rapid pace. The pace was rapid enough to make Aurora the fastest growing municipality in the United States with a population over 100,000, for three of those ten years. Toward the end of that decade, the City had begun to run out of vacant land for residential development.

By 1985, a number of substantial public infrastructure projects were being planned for the area just beyond the eastern boundary of the City's Blue Line. Those projects included the new Denver Airport, E-470, the Front Range Airport, (which opened in 1982), the Aurora Reservoir, and the Arapahoe Downs Race Track, (which also had opened by that time).

Colorado's metropolitan district legislation contributed in a significant way to the City's decision to rescind the Blue Line Policy. Metropolitan districts are designed, in part, to allow developers to provide their own urban services as an alternative to securing them from existing local governments. The dilemma the City faced was that once a property had secured commitments for urban services, whether through a district or

1. Peter Grosshuesch is a Senior Project Coordinator with the City of Aurora, Colorado.

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another means, there was little incentive for the owner to seek annexation to a city.

These factors combined to make it highly likely that development would occur near these facilities whether the City annexed into the area or not. The City chose to annex rather than become an inner-ring suburb, insulated from the lucrative development typically found near the fringe of the urban settlement.

COMPREHENSIVE PLANNING

Prior to annexing beyond the Blue Line, the City conducted a very extensive analysis of the land within the intended annexation area. These studies provided the basis for a subsequent master planning effort. The preparation and adoption of the City's Comprehensive Plan for the area enabled Aurora to entertain large scale annexations in a relatively short period of time, and to do so with the confidence of knowing how it would provide urban services to the area. The following is a brief description of the base studies prepared in conjunction with the Master Plan:

Water and Sewer - The City conducted a $500,000 study that projected the demand for water and sanitary sewer service. The study also identified and located major facilities to provide the services.

Drainage Basin Master Planning - The City shifted its philosophy from on-site storm water detention to a more cost effective, overall regional detention facilities approach. The Study also identified the location of the related major capital facilities. In addition, it inventoried areas of significant wildlife habitat, archeological value, and significant open spaces that would be preserved from development.

Computer Assisted Traffic Modeling - The City conducted its own computerized traffic modeling in order to establish a functional relationship between the carrying capacity of the roadway network and the planned land uses it is intended to serve.

Fiscal Impact Modeling - The City conducted extensive fiscal impact modeling to ensure that the planned, full build-out development scenario would generate sufficient cash flow for the City to support the related new demand for urban services.

ANNEXATION PROGRAM

The City has annexed over seventy square miles of land, more than doubling its land mass since lifting the Blue Line policy. Some of the annexations were of parcels containing more than one thousand acres, the largest one being the Northern Quadrant at more than ten thousand acres.

The Current high priority locations for annexation lie adjacent to the new Denver Airport, the Front Range Airport, and along the E-470 Corridor. It is anticipated that these locations will be the most likely places for early development in the City's planning area.

Airport Environs Planning

Shortly after the City repealed the Blue Line policy and began annexing property, the final location of the new Denver Airport was announced. At that time, several of the local governments near the new airport were approached by a prominent property owner in the area to join him in seeking advice from the Urban Land Institute for positioning the land near the new airport for development.

Based, in part, on advice received from the Urban Land Institute, the local governments surrounding the new Denver Airport jointly prepared a land use and transportation plan for the area. The plan prepared by Adams County, Aurora, Commerce City, and Brighton became known as, "The Airport Environs Plan."

A primary goal of the planning effort was to maximize the economic development potential of the land surrounding the new airport, while prohibiting residential development from encroaching under its flight tracts. Accomplishing the latter would remove the biggest potential constraint to the Airport's future growth. The approach taken by the planners was to integrate the goals for economic development within a plan for a high quality environment in which to live, work, and recreate.

Another goal of the plan was to counter the perception identified by the Urban Land Institute panel, that the area would become "Balkanized" by the lack of coordinated planning for the area. Denver's planning for the Gateway Area along Airport Boulevard was later coordinated with that of the Airport Environs Plan, thereby ensuring that all of the land surrounding the new Denver Airport had been planned in a coordinated manner.

Environmental Impacts

The noise contours generated by the arrival and departure tracts of the new airport define a forty-five square mile area unsuitable for residential development. These contours extend environmental impacts into an area of approximately 250 square miles that had to be accounted for in planning for land uses in the environs of the new Denver airport.

This vast reservation of non-residential land gave rise to a concern that the airport environs might become plagued with a fundamental imbalance in the supply of land by category of use, and would therefore exert forces leading to sub-optimal absorption patterns in the airport environs' real estate market.

MARKET STUDY

Due to the concern mentioned above, and to the unique nature of planning for the new airport, a real-estate market analysis was conducted and used as a base study in the preparation of the Airport Environs Plan. The jurisdictions wanted to ensure that sufficient land would be set aside in the most advantageous locations, with the appropriate public infrastructure and urban services to accommodate businesses likely to locate in the area surrounding the new Denver Airport.

The market study projected that the 250 square mile area contained within the Airport Environs Plan area would absorb anywhere from 23 to 30 million square feet of commercial development by the year 2010. This level of absorption would create anywhere from 68,800 to 91,500 new jobs in addition to the 33,800 transferred to the new airport from Stapleton International Airport when it closes in 1993.

This absorption would occur within seventeen years of the airport opening in 1993. Of that total: industrial absorption will account for 13.8 to 16.6 million square feet; office development will absorb from 4.8 to 7.7 million square feet; retail development will account for 1.7 to 2. 5 million square feet; and lodging development will amount to 2.8 to 3.3 million square feet (or, 5,600 to 6,600 hotel rooms). Additionally, there will be 25,000 to 31,700 new residential dwelling units constructed in the airport environs by the year 2010.

The difference in the range of absorption rates for each of the categories is explained by the two different build-out scenarios developed by the consultant. The low end of the ranges represents a "base case" scenario, where the local governments simply extend infrastructure and urban services on a timely manner, and of sufficient quality to provide only the minimum level of urban services needed to sustain development.

The high end of the ranges represents the "enhanced case" scenario, where it is assumed that higher quality public infrastructure elements and urban services are developed then described in the base case, the airport environs successfully establishes for itself an image of high quality. Further, it is assumed that this image is aggressively marketed to developers with an interest in quality office and industrial parks, on both a national and international basis. The reward to the communities in the airport environs for achieving the enhanced case scenario is an additional forty percent increment in the absorption of real estate over the base case.

In elaborating on the ingredients making up the quality image necessary to achieve the enhanced case, the market consultant specified that the cities must develop high quality public infrastructure, a first class parks and recreation system, good schools, high end retail facilities, and nearby executive housing. In short, a comprehensive community development effort was prescribed. The City responded by developing a strategic plan entitled, "DVX Aurora", that will be discussed later.

In addition to developing projections for real estate absorption, the market consultant described the types of tenants, or end users, that are likely to locate in the Airport Environs. In addition, the consultant predicted where those tenants might prefer to locate in the Airport Environs, the types of services and infrastructure needed to support them, when they would be likely to develop, and what the communities surrounding the airport could do to make the environs more attractive to them.

The market study also provided assurances that if land use planning was properly thought out, there could be an adequate supply of land in the most advantageous locations for the respective end users. This, in spite of the fact that large land areas will be affected by aircraft noise related land use restrictions. With this information in hand, the planning staffs of the airport environs jurisdictions proceeded to distribute land uses on the Airport Environs Land Use Plan.

Incorporated in the land use plan is a transportation system that is anchored by an expressway system looping around the new airport and connecting with an arterial network arrayed on a one mile grid. The east leg of the expressway loop is the planned E-470 circumferential freeway, that will eventually encircle the eastern half of the Denver Metropolitan area. The jurisdictions agreed on the alignments and the functional classifications of the roadway facilities making up the transportation plan, thereby ensuring continuity in the system throughout the airport environs. This combination of roadway facilities provides convenient access for the surrounding properties to both the airport and the nearby regional highway system. The regional highway system serving the airport environs includes: I-70 on the south, I-76 on the northwest, E-470 on the west, and Airport Boulevard connecting the passenger terminal with I-70.

Emerald Strands Parks, Trails, and Open Space Plan

An award winning parks, trails and open space plan entitled "The Emerald Strands," was developed as a part of the Airport Environs Plan. This plan, in addition to assuring continuity in the trail system between jurisdictions, will accommodate the recreational needs for the planned development, and will protect significant open-space and wildlife habitats from development pressures. Implementation of the plan has already begun, and when completed, the planned system will go a long way in contributing to an image of quality for the Airport Environs. The Airport Environs Plan was adopted by all of the Airport Environs jurisdictions in 1990.

DVX AURORA, THE STRATEGIC PLAN

The City of Aurora has taken the airport environs planning task to the next level of detail by developing a strategic plan that will position its planning area for the new airport real estate market. In doing so, the City began with the finding of the market study that there would be a half-dozen distinct, and geographically separate real estate sub-markets in the 250 square mile airport environs. Four of those sub-markets are located in whole or in part, in the Planning Area of the City of Aurora.

The City chose to develop strategic plans for each of these areas by refining the market consultant's projections for development types likely to be attracted to each of the sub-markets. A vision statement for each sub-market was prepared, defining the character of development. The individual strategic plans also identified infrastructure elements needed to open each area for development as well as specifying additional infrastructure needed in subsequent phases of build-out. Portions of those infrastructure plans have been translated into the City's five year capital facilities plan, with some of those projects are already under design.

The City has also begun to develop and implement marketing strategies for each of the four sub-markets in its Planning Area. In doing so, the City has worked closely with its economic development agency, the Aurora Economic Development Council.

A brief description of Aurora's Airport real-estate sub-markets follows:

> The I-70 Corridor extending from the existing developed industrial areas near I-225, eastward to the Front Range Airport, will likely attract a substantial share of the 13 to 17 million square feet of industrial development predicted for the Airport Environs. The type of development the City will recruit includes light manufacturing, warehousing, and distribution activities, including air-cargo and freight forwarding. This corridor, with the near-by main line of the Union Pacific Railroad and convenient access to the regional highway system via I-70, is an ideal transhipment point that will make it a convenient location for a wide variety of multi-modal activities.

THE INTERNATIONAL CENTER

The International Center is a part of the E-470/Airport Boulevard sub-market identified by the market consultant. The City will strive to establish a major activity center there by integrating class "A" office parks, lodging facilities, high end retail centers, and executive housing in the vicinity of the nearest interchange to the passenger terminal for the new Denver Airport. This is a likely location for a substantial share of the office development that will locate in the airport environs.

THE AURORA GATEWAY CENTER

Located on property surrounding the interchange of I-70 and Airport Boulevard, the Gateway Center will cater to office and lodging activities. The fringe of the Gateway center will transition into office showroom and universal space commercial development. Because urban services are already available at this location, the Gateway Center will likely be one of the first sub-markets to develop in the Airport Environs.

THE FRONT RANGE AIRPORT CENTER

The Front Range general aviation airport anchors this activity center, located several miles southeast of the new Denver airport. This sub-market is served by both I-70 and the Union Pacific Railroad. The City will join with the Front Range Airport Authority in marketing this area to a full range of aviation related industries, including aircraft manufacturing, air cargo, general aviation, and distribution activities requiring multi-modal transportation assets.

CONCLUSION

The City of Aurora has already accomplished a lot in preparing for development around the new Denver airport. The biggest challenges however, lie ahead in the provision of urban services and attracting the mix of development that will establish the Airport Environs as the Denver Metropolitan area's most exciting new location for business investment.

DAVID PLAVIN[2]

It's a little daunting that I am in a group of this kind and that I should be identified as an expert. I don't claim to be an expert. I claim to be somebody who has, over a career of different kinds of jobs, attained some perspectives that I would like to share with you. Almost every industry with which I've been associated involves the transportation business. There are cycles that can be identified in the history of those businesses which have an impact on the bottom line of how you make a decision in investing in those businesses.

When you go back to the early days of shipping, the port was identified because of some attractive geographic features and some attractive locations. The railroads were bound in the same way, but to a lesser degree. Obviously, airports are even less bound. They have the advantage of being relatively independent of geographic features and, today, their importance is as much a function of centrality as it is of historic location and market. I want to come back to market because, in many ways, the discussions that we are going to be having this morning have to do with what the nature of the market is and how that relates to services in individual communities. And, in looking at this issue, I want to keep in mind several questions that we will come back to at the end of my remarks, questions about how you make economic decisions and what kind of criteria to use.

First, is this investment an article of faith or is it an issue of image? And, while there are many people who would say "No, no, no, it's not an issue of image," it clearly is. There is no question that a major world class community is going to need a world class facility to be its gateway to the world. That's not as important in making the decision even though it is a very hard element to quantify.

Second, at the other end of the spectrum, what kind of return will it generate? What is the nature of that return? And on whose books will that return appear? These are not unimportant questions because the nature of government in the U.S. is so balkanized that responsibilities for investment are often allocated very differently from those people and entities that will reap the benefits of those investments. And then, indeed, what kind of return are we talking about? Are we talking about rents to an airport operator?. Are we talking about taxes to a community? Are we talking about jobs? Are we, again, talking about a business environment that is attractive to the world in some fashion. Who is going to pay the

2. Mr. Plavin is the Director of Aviation for the Port Authority of Newark, New Jersey. Mr. Plavin prior to coming to the Port Authority, served as its Chief Financial Officer for a period and as the Director of Aviation Redevelopment Program. He spent over eight years prior to that time as the Executive Director of the Metropolitan Transportation Authority.

costs of these investments? Who indeed. I think that is a very important question a lot of us have lost sight of in some of these discussions. How much investment is necessary and how much is enough?

All of these questions need to be addressed. I know that I am not going to have any particularly exciting answers to these questions, but I think that the importance is in addressing all of these elements.

In asking these questions, let's go back to why some of the airline centers, hubs, developed the way they did. Originally, in the aviation business, domestic airline service connected local markets and they were local centers which had been already established as hubs for other reasons, whether for railroads or for shipping purposes. Hub locations were also a function of the distances that planes could fly. We were bound by a technology that was essentially very limited and it was especially true for traditional ports which became transfer locations as the industry progressed from domestic to international operations. Then we developed longer distance capabilities and that intensified, for a while, the advantages of coastal locations because you were able to fly across the Atlantic, and across the continent, and across the Pacific. But, as the longer distances became possible, a lot of intermediate locations became unnecessary and, in fact, we are still seeing that process take place today.

There are some United States and international cities who are on the map precisely because they were stopping off points for international air travel and they are no longer necessary for that purpose. Regulation reinforced that pattern by designating certain carriers as international carriers and other carriers for domestic service only. I would remind all of us sitting here that international travel continues to be regulated by a series of complex bilateral agreements (to which I would also add the adjective "unfathomable") which, in today's environment of world-wide routes and ownership, are probably entirely outmoded and will need to be replaced. They will probably be circumvented anyway as globalization of airline ownership becomes more the rule.

International airlines historically were prohibited from engaging in domestic service. They were actively discouraged from developing domestic route structures and, until recently, the reverse was true for domestic carriers.

Going back to the domestic interior for a moment, there were many centrally located significant economic centers with airports of sizable capacity that were being greatly under-utilized from the aviation point of view. During the years leading up to deregulation, domestic carriers came to these facilities and gave them proposals they could not refuse. Precisely because they were not heavily utilized, they were ideal places (from a use of airspace point of view) to become hub and spoke operations.

Far-sighted communities who needed the business got the business in a variety of ways in which that term can be interpreted. They got jobs. They got air service which grew in quantum amounts, but they also saw their facilities increasingly controlled by the carriers who came there to set up business. We have heard a great deal about the nature of the control of carriers exercised over the airports so I won't dwell on that at this point. Suffice it to say that the hubs give the domestic carriers a power in dealing with routes and route structures that they had not previously had. And with deregulation, domestic activity exploded and the political power of the domestic carriers exploded along with it. They now had the power to begin to challenge the monopolies on international routes and to attack the international hubs. They also had a vision of new aircraft that could reach inland gateways and that were small enough and economic enough to be serving sparse routes. You did not need big aircraft; you now had small aircraft that could begin to serve less populous and less active gateways inland. We are now faced with a situation where the two international carriers who had not previously been permitted on the domestic scene simply could not catch up. Where Pan Am's attempt (by buying National Airlines) was a total failure–they really could not swallow National, it's different culture and it's different union structure. In fact, as somebody remarked the other day, all that's left of Pan Am is what they got from National, a rather remarkable turn of events. Well, why couldn't they catch up?

First of all, they had neither the necessary management capability nor a geographic base. Pan Am's lack of a geographic base became quite a disadvantage and at the same time, there was a sense among the domestic carriers that their status would be significantly enhanced by access to international routes. In the highly regulated international market, free of what has been called destructive competition, there are higher yields, revenues, returns, profits, whichever of those nasty words you want to use. But airline demands and aspirations were not enough because international route decisions were made within a very small group including, obviously, the interested carriers at the time. On the transatlantic side there was Pan Am and TWA; on the Pacific side, there was Pan Am, and Northwest; South America on a smaller scale, Braniff and Pan Am. Notice that Pan Am was in each one of those regions.

The U.S. government was very concerned that Pan Am was so powerful that it would overwhelm any of the other carriers if they had a domestic service. The demands and aspirations of the domestic carriers needed assistance. They needed assistance with the political structure and their versions of what used to be called "the Senator from Boeing" are now "the Senators from American and from TWA" and yes, even "the Senator from America West." The domestic carriers now created a symbiosis that produced the desire to combine the aspirations of the airlines with those of the communities from which they operated, to launch an assault on these international fortresses. Thus, the economic element rationale was developed as a tool to get there. Communities began to say, "how do we marshal the resources?" Senators are not interested in the fact that one business competes with another, unless there is something in it for their constituents. So the numbers became important. We now have a whole industry of people who produce numbers justifying things from an economic benefit point of view, and we in New York do the same thing. When you look at the metropolitan region of New York and New Jersey, we have a thirty-one county region in three states. It has 20 million people and a half trillion dollar economy, which is about the size of the gross national product of Canada. The region is a vast area which stretches from Trenton on the south to New Haven on the north and obviously, we expect that it will continue to play a dramatic role.

Here are some numbers because everybody has numbers and the bigger the better. So here are some interesting ones:

The aviation industry in the metropolitan region of New York accounts for about three point five percent of the gross regional profit in the New York Metropolitan area. It is obviously a major generator. It accounts for $22 billion annually in economic activity, 244,000 jobs and $7 billion in wages and salaries. The air cargo component of that is extremely large and air cargo is an interesting phenomenon in the sense that it is beginning to follow passenger activity. We are seeing larger and larger aircraft with larger amounts of excess capacity, it is natural for that capacity to be sold cheaply and to be able to be used, in fact, to reinforce a carrier's passenger hub with similar kinds of patterns for cargo activity. Cargo activity alone in the New York area accounts for some 98,000 jobs and visitors, which are excluded from the numbers I have just given you, and contribute an additional $15 billion a year in economic activity, and over 200,000 jobs.

In that context, I want to come back to the questions that I raised earlier because the previous speaker talked a little about some of the other techniques that have followed as people have begun to ask some of the tough questions about these numbers. I caution you from the beginning that these numbers are suspect. There is an agenda associated with them. But the point is not whether the numbers are particularly precise or accurate. The point is that we are finally recognizing the need to begin to quantify what it is we are getting for our investment. What is it, in fact, that is going to turn around and create business? Because airport investment is useless if the underlying market strength of the local economy isn't there. Can an airport survive without it? Well, that's an interesting question. In the New York area, we built three terminals at Newark Airport, one of which laid totally empty and uncompleted for twelve years. But because we had that terminal we were able to attract People's Express during the heyday of economic deregulation. The terminal's availability, however, was able to be combined with the strategic location and a strong economy. So you really need all of those in order for that to be able to work. We are beginning to see further evidence of that on the outskirts of the New York metropolitan area with growth in passenger activity in Stewart Airport. A very large underutilized facility which New York State took over from the federal government when they went out of the airforce base business at Stewart.

Let's come back to the issue of who is really going to pay for these investments. Historically, the airport operator has been the entity to pay. But, it really is not the airport operator who is paying. The airport operator is making the investment and then seeking a return from the carrier who in turn, is seeking a return from his passengers. It is not anyone other than the passenger who ultimately pays the price. This is a classic example of an old comedy routine from the Monty Python show where they costume themselves as a town counsel, trying to decide how to raise revenue; they decided to levy a tax on all foreigners living abroad. That's who airline customers are. They are nobody's constituencies. They are foreigners living abroad for tax consequences. And so, it is the passenger who pays the price of your investment. The fundamental question is, "Will there be enough passengers to pay that price?" That is the question the airline will ask.

Additional investment means that the airline has to have a plan and be willing to put enough passengers through your airport at today's prices and be able to charge high enough fares. That's the second part of that question: "Can they charge enough to be able to recoup the investment?" It doesn't really matter what the cost of that investment is, provided that there is enough revenue associated with being able to put enough passengers through the facility. If you negotiate a lease with an airline, his question to you is how do I recoup that? And your job obviously, is to help him figure it out. Additional service means he has additional costs. How will he amortize these costs? It had better be worth it. Of course, an airline and some passengers make it all worthwhile.