



ALBUQUERQUE MODERN RAIL SYSTEM EVALUATION

Sunport to Alvarado Transportation Center Alignment

PREPARED FOR



The City of Albuquerque
Department of Municipal Development
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PREPARED BY

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Key Findings

- The Sunport modern rail line measures well on several important cost-benefit metrics, particularly operations cost per passenger and investment leverage. It should cost approximately \$2.05 per passenger to operate the modern rail system during the opening year, which is very competitive with the modern rail lines now operating in peer cities. For example, the cost per passenger for the Little Rock, Tampa, and Seattle lines ranges from \$4.25 to just more than \$6.00; Portland's is the only system reviewed that costs less than \$2.00 per passenger to operate. The modern rail system is expected to have a positive investment leverage of 7.4 private dollars invested for every public dollar. Put another way, a \$127.2 million capital investment in the modern rail line is expected to generate \$966 million by 2030.
- The ridership and redevelopment metrics for the Sunport modern rail alignment have a high potential to meet or exceed typical modern rail success factors. The ridership in the first full year of operation could achieve 7,500 daily rides, potentially making it the city's most-used transit line. In order to reach this goal, however, ABQ Ride, UNM, and Sunport leaders will need to work cooperatively to manage parking demand along the line and integrate existing transit ridership into one streamlined system. As redevelopment continues—particularly along Central and surrounding the UNM's Main and South Campus areas—ridership will also grow.
- The modern rail line can be expected to spur and serve significant redevelopment along the line, including approximately nearly 13,000 new residents and employees, and five million square feet of new development. The result will be an increasingly vibrant and active interconnected series of centers for business, recreation, housing, education, and culture.
- Urban redevelopment, strong transit ridership, and tourism growth are interdependent and require a holistic and multifaceted approach. The modern rail system will be an important asset in helping Albuquerque to achieve these goals, but other complementary efforts will also be necessary, including ensuring the emergence of compact, transit supportive development adjacent to the line through proactive planning and design, financial and entitlement incentives, public-private partnerships, and partnerships with UNM and other important public sector organizations.
- There is potential for dramatic redevelopment on the Segment 3-South Yale Corridor, but they will be more difficult to achieve and will require a set of concerted public actions and investments.
- The modern rail system has the potential to be an important asset in Albuquerque's pursuit of attracting more tourists, conventions, and tourism spending every year. However, other goals—primarily, the construction of an events center and headquarters hotel—are also equally important to the growth of tourism.
- The previously-estimated capital cost of \$30.3 million per double-track mile (adjusted to 2010 dollars) for the Albuquerque modern rail system project is reasonable and appropriate.
- Under a high-quality service operating scenario, with 15 minute headways during peak periods, the Sunport modern rail line would cost approximately \$4.4 million per year to operate.

Introduction

Project Background

This report presents a cost-benefit analysis of a potential modern rail transit alignment, which would run from the Alvarado Transportation Center (ATC) to the Albuquerque International Sunport, connecting many neighborhoods and activity centers along the way. The purpose of the analysis is to provide objective information about the costs and benefits of the proposed rail transit line to help inform policy makers and the public. The goals of this report are as follows:

1. Review and comment on projections of ridership, capital and operating costs, and other attributes of the proposed modern rail system made by prior consultants and public agency staff.
2. Analyze the real estate development (or land use) impact that can be expected as a result of the modern rail system.
3. Combine costs (capital and operations) and benefits (ridership, real estate development, and others) into a cost-benefit matrix that can be used by decision makers to evaluate the project.
4. Make strategic recommendations about what other public actions should be implemented along with the modern rail system if the City decides to proceed with the construction of the line.

The report begins with a discussion of the benefits and impacts of the proposed modern rail system, including ridership estimates, land development impacts, and tourism development. This is followed by an analysis of capital and operating cost estimates. These two sections are then analyzed to arrive at cost-benefit conclusions. Finally, the report concludes with strategic recommendations on implementation and funding.

Description of the Proposed Sunport Modern Rail Line

Figure 2 below shows the proposed Sunport modern rail alignment, the three alignment segments, and the primary activity centers/ridership generators along the line. The distance between the Sunport and ATC (Central Avenue at First Street) is 8.4 single-track miles, or 4.2 double-track miles in length. It is possible that some additional supporting track may be needed to accommodate dwelling vehicles (during layovers) in downtown or at the Sunport, or to reach a vehicle maintenance facility. The alignment segments were defined by the consultant team in order to link specific benefits and costs to specific parts of the route. In addition, each serves a set of very different land uses and activity centers, and plays a different role in the City's transportation system. The alignment segments are 1-Central Avenue (from Second Avenue to University Avenue), 2-University/Yale Couplet (from Central Avenue south to Avenida Cesar Chavez), and the 3-South Yale Corridor (south of Cesar Chavez to the Sunport). The costs, and ridership and redevelopment impacts discussed in the following report sections are often broken down by alignment segment.

Segment 2 is unique in that it would operate as a couplet, with rail vehicles traveling south only on University Boulevard and east only on Avenida Cesar Chavez. On Yale Boulevard, the rail cars would run north only between Cesar Chavez and Central, but both north and south (double track) between Cesar Chavez and the Sunport.

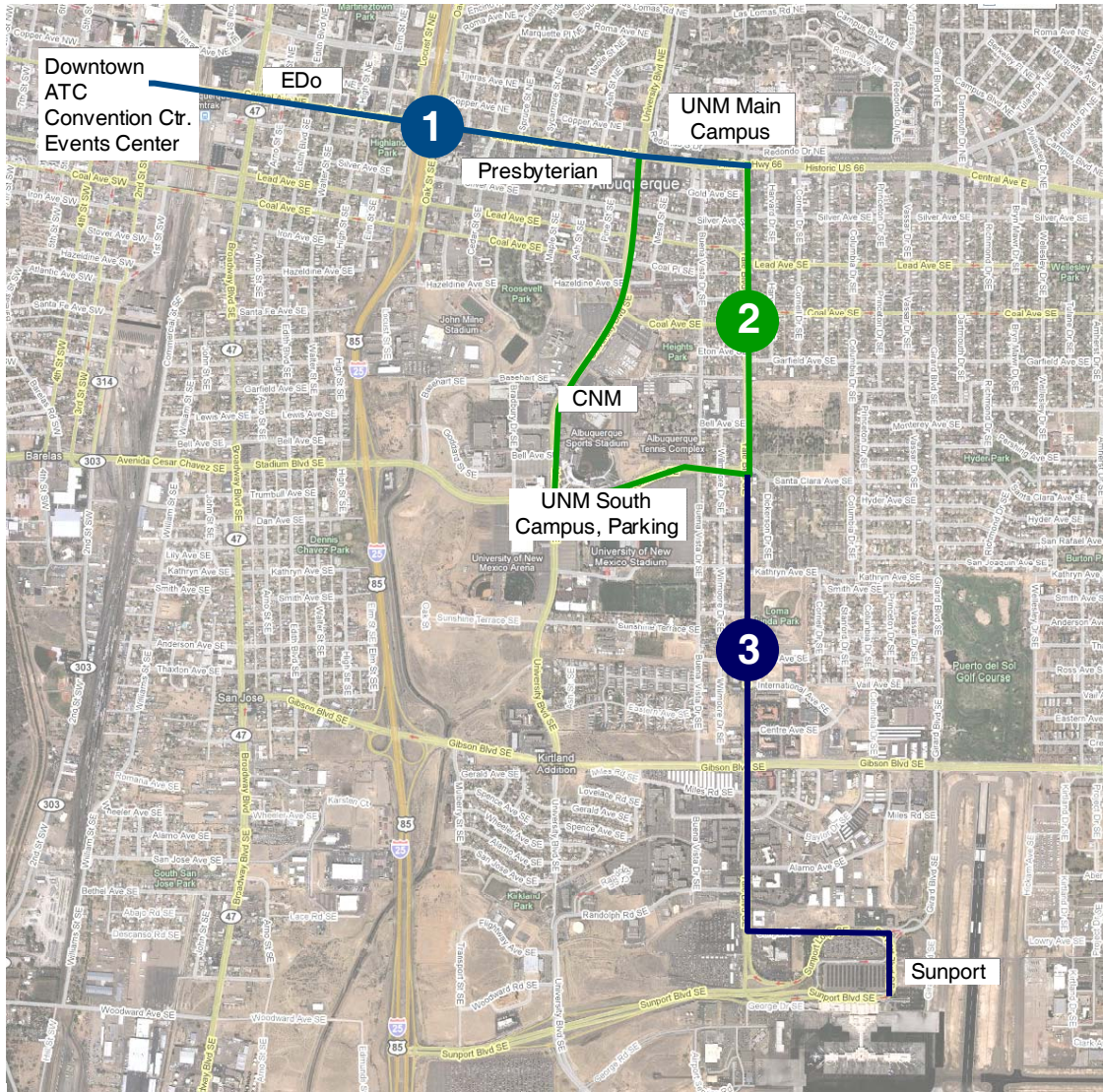
Every other vehicle would run to the Sunport, so arrivals and departures there and at other stations on Segment 3 would be at half-hour frequencies during peak periods. Thus, half the time the modern rail system would run a "short loop" through Segment 2, returning quickly from the UNM South Campus. The other half of the time, the rail cars would complete the full loop. Other destinations would be served on every trip.

Albuquerque's modern rail system will most closely resemble the Portland Streetcar line, shown in Figure 1 below, and will share similarities to light rail lines as well. The modern rail line will be capable of speeds of up to 50 miles per hour (within a dedicated lane) but will cost significantly less than light rail lines, because the cars will be smaller and lighter, and thus require less subsurface structural work during construction.

Figure 1. Modern and Vintage Rail Service in Portland, Oregon and Tampa, Florida



Figure 2. Map of Proposed Sunport Modern rail Line, with Alignment Segments



Source: City of Albuquerque, HDR Inc, Google Maps, Leland Consulting Group

Modern Rail System Impacts

Ridership

Ridership projections are important to the system, but are just one among several measures of success. The opening-year ridership estimates of the ATC-Sunport Modern rail system fall into the very high end of the range indicated by peer cities, some of which have much higher densities than Albuquerque. Ridership forecasts are likely to be a performance measure that the public and elected officials use to gauge the success of the system. Ridership estimates for the ATC-Sunport Modern Rail System were determined based on a number of assumptions and existing conditions:

- **The Sunport line will capture ridership from University of New Mexico (UNM) and airport shuttles.** The modern rail system will allow UNM and the airport to reduce or eliminate existing shuttle services, enhancing and stabilizing ridership and creating an opportunity for funding partnerships among the benefiting entities. Modifications to campus parking policies and limiting or reducing the number of surface lots may also produce additional riders.
- **Major destinations are located throughout the proposed modern rail alignment and will positively contribute to the system's function.** In the context of constructed systems in North America, the ATC-Sunport modern rail system will provide access to popular destinations commonly found along successful routes. These destinations include downtown Albuquerque, close-in residential neighborhoods, UNM, the Albuquerque International Sunport, ATC and the Rail Runner service, Isotopes Park, UNM Stadium, Presbyterian Hospital, Central New Mexico College (CNM), plus many more.
- **Some ridership from current transit routes can be expected to shift to the modern rail line.** Given the origins and destinations of the existing bus riders in the proposed alignment (Routes 50, 66, 350, and Rapid Ride), most trips now being taken on the 50 and 350 lines could be served by the modern rail line during peak and off-peak periods, which would likely completely replace those two lines. The interaction between the modern rail line and Route 66 and Rapid Ride (all on Central Avenue) should also be examined, in order to minimize operations costs and redundancies, maximize service, and coordinate stop areas. Some service-hours could potentially be redeployed to other parts of Central Avenue or other parts of the City.
- **Ridership is likely to come from both new trips by current residents and employees in the corridor, as well as from growth in the number of individuals living and working in the area.** As a unique service offering an experience not presently offered by existing transit options, and as a unifying theme providing identifiable and reliable accessibility to a variety of destinations, a modern rail line is likely to induce transit use by existing residents. It may also induce development of transit-oriented residences and businesses, attracting new residents that are more inclined to use transit as a primary mode of travel. Therefore, the system plan and ridership projections should recognize the unique manner in which the modern rail line will capture new riders who do not currently ride buses and new residents and workers associated with new development near the modern rail line. Findings from an analysis of peer cities shows a strong relationship between increased private investment and

fixed guideway rail investments (as opposed to other transit investments). Later sections of this report address future land use scenarios.

The ridership projections for the ATC-Sunport Modern Rail Line are shown in Table 1 and are described in the following pages. For the ease of understanding the changing conditions along the modern rail alignment, the analysis was broken down into three alignment segments, which are shown on the map on page 4. Ridership was also broken down in five-year segments through 2030 to reflect the population and employment growth that is projected to occur in the study area. As discussed in the land use section later in this report, three growth scenarios were assumed (high, moderate, and base) to reflect the increased development that is likely to occur if the modern rail line were to be built. Ridership projections are shown on an average weekday basis as well as on an annual basis. These projections *do not* include additional ridership that would occur from major events at Isotopes Park, UNM Arena, and UNM Stadium. Ridership from these events is discussed below.

Table 1. Sunport Modern Rail Line Non-Event Ridership, Complete Line

Land Use Scenario		Year				
		2010	2015	2020	2025	2030
High Growth	Average Weekday	7,496	11,183	14,871	18,558	22,246
	Annual	2,153,473	3,212,893	4,272,313	5,331,734	6,391,154
Moderate Growth	Average Weekday	7,496	10,343	13,191	16,038	18,886
	Annual	2,153,473	2,971,588	3,789,703	4,607,817	4,014,811
Base Case	Average Weekday	7,496	9,503	11,511	13,519	15,526
	Annual	2,153,473	2,730,282	3,307,092	3,883,901	4,460,710

Source: Fehr & Peers, Leland Consulting Group

Alignment Segment 1 - Central Avenue.

Average weekday non-event ridership: 1,120¹

In addition to the induction from new housing and commercial development, the segment 1 ridership estimate was based on transferred ridership from Route 66 along Central Avenue. Approximately 14 percent of boarding and alighting activity for Route 66 occurs between 1st Avenue and University Avenue. Unfortunately, origin/destination data is not available for Route 66 riders. As such, 14 percent of Route 66 ridership was transferred to Segment 1 of the Sunport modern rail line alignment. Ridership was not grown once it is transferred to the modern rail line.

The connection between the modern rail system and current Rail Runner service (with a daily ridership of approximately 2,000) will also create synergies and potential for ridership growth in both systems. The connection will provide a superior transportation service for those making intercity trips via rail and long-distance trips via the Sunport.

Alignment Segment 2 - Yale/University Couplet.

Average weekday non-event ridership: 4,850

Annual event ridership: 160,380 (Generated by Isotopes Park, University Arena, and University Stadium.)

Segment 2 was evaluated for two ridership projection scenarios. The first scenario was the non-event scenario, which estimated average daily ridership but did not include event-driven ridership. The

¹ All ridership projections listed in the report body assume the “aggressive” operating scenario.

second scenario was the event scenario, which estimated event-driven ridership as an annual ridership increase over the non-event scenario.

In addition to the ridership induced from new housing and commercial development, the non-event scenario estimated ridership based on current use of the UNM South Parking Lot shuttle, and other activity generators in the area such as CNM. The UNM South Parking Lot shuttle provides access to off-campus parking and overlaps almost entirely with the Sunport modern rail line alignment. The non-event scenario assumed that if the modern rail line was built, the University would be able to eliminate the South Parking Lot shuttle service and all ridership would transfer to the modern rail system. The shuttle currently has just fewer than 5,000 average daily riders while school is in session. CNM has 20,000 students and 1,000 employees, all potential riders of the modern rail line.

The event scenario evaluated the impact that events at Isotope Park, University Arena, and University Stadium would have on annual modern rail system ridership. The proposed Sunport modern rail line alignment would have stops near each of the event venues. Since the proposed modern rail line alignment connects these event venues to downtown Albuquerque, a range of residential neighborhoods, and the ATC, it is likely that a certain percentage of event attendees would use the modern rail line to get to and from the events. To determine the percentage of people would be likely to use the modern rail line, peer analysis was conducted. The city of Tacoma has a segment of modern rail line called the Tacoma Link, which is run by Sound Transit. The Link connects the Tacoma Dome event center, downtown Tacoma, and regional commuter rail. According to phone conversations with Cleve Cleveland at Sound Transit, approximately 11 percent of people use the Tacoma Link to get to events at the Tacoma Dome. It is possible that 11 percent of attendees of a sold out University Stadium football game would take the modern rail to and from the game after parking in downtown, transferring from other ABQ ride bus routes in their neighborhood to the modern rail line, or walk from residences/dorms along the line to a modern rail stop. If this occurred there would be approximately 4,000 people that would need to be accommodated on the system. Since most events flush within an hour of the event's completion, the modern rail line would need to move 4,000 people in one hour. This would exceed the system capacity of the modern rail system as proposed in any of the operating scenarios. To accommodate this additional demand five additional modern rail vehicles would need to be purchased, operated in tandem with the current fleet of five vehicles, and maintain headways of 15 minutes to ATC and downtown parking lots to meet the peak event demand. The purchase of five additional modern rail vehicles would increase the capital cost by approximately \$15 million.

If the investment was made in the additional modern rail vehicles and the system ran at higher capacity for all events at the three event venues, an overall increase in annual ridership could be achieved. Additionally, the increased rolling stock would allow the system to run with seven-minute headways.

Alignment Segment 3 - South Yale.

Average weekday non-event ridership: 1,525

In addition to ridership induced by new housing and commercial construction, the Segment 3 ridership estimate was based on transferred ridership from ABQ Ride routes 50 and 350. Both routes travel between ATC and Albuquerque International Sunport. Approximately 50 percent of route 50 is overlapped by the modern rail line alignment. As such, 50 percent of Route 50's ridership was transferred to the modern rail line. Route 350 is a direct route between the ATC

and Sunport. As such, 100 percent of the ridership was transferred to the modern rail line. In addition to the ridership transfer, a peer analysis was conducted for other cities in the U.S. that have rail lines connecting to the airport. The Transportation Research Board Airport Cooperative Research Program Report 4 titled *Ground Access to Major Airports by Public Transportation* evaluated 27 U.S. airports and catalogued the percentage of travelers using bus and rail transit for airport access. Rail market shares for airports with rail access range from one to 13 percent, with an average of six percent.

The Albuquerque Sunport serves 6.4 million passengers a year or 17,500 per day. If the average six percent rail ridership is applied to the Sunport daily passengers, the modern rail line would transport 1,052 riders. The six percent mode share would include people attending conventions in Albuquerque, travelers with final destinations in Santa Fe, and Albuquerque residents and visitors.

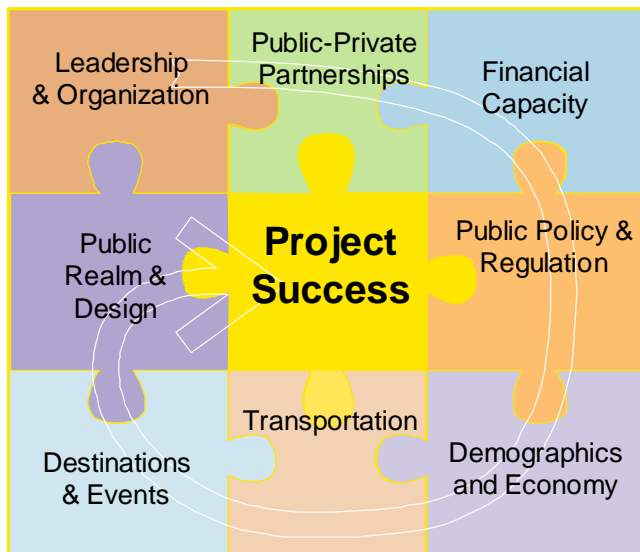
Redevelopment (Land Use) Impacts

Modern Rail Systems and Redevelopment. Modern rail systems have the potential to spur and guide new high-density residential and commercial redevelopment. Modern rail systems offer urban residents, employees, and visitors a means beyond the car to get around town – but they go beyond this by providing a ride that has been described as fun, attractive, new, and iconic. While the precise form and magnitude vary from place to place, this phenomenon has been documented in every city that has recently built a modern rail line, including Portland, Seattle, Little Rock, Tampa, and Tacoma.

Higher density urban redevelopment offers a wide variety of benefits to a community: it supports vibrant downtowns and center city areas that communities can enjoy and take pride in; it can increase the popularity of the city and region in the eyes of new residents, businesses, and visitors; it represents the most sustainable form of development possible, because it generally lowers vehicle miles traveled and energy costs; and it is usually fiscally beneficial, because it does not require geographically extensive new road, utility, and service extensions.

Modern rail systems are not the only factor that influences and guides the amount and location of urban redevelopment – in fact, they are just one among many factors. Other factors include the economy, real estate market conditions, demographics, public policy, site characteristics, location of employment and activity centers, proximity of urban amenities such as parks and open space, and other factors. However, when thoughtfully combined with the other “Conditions for Success” shown in Figure 3, modern rail systems have been shown to have a powerful impact on urban redevelopment. In short, in order to spur redevelopment, modern rail systems should be implemented *along with* other actions and policies, rather than *alone*.

Figure 3. Conditions for Success



Source: Leland Consulting Group

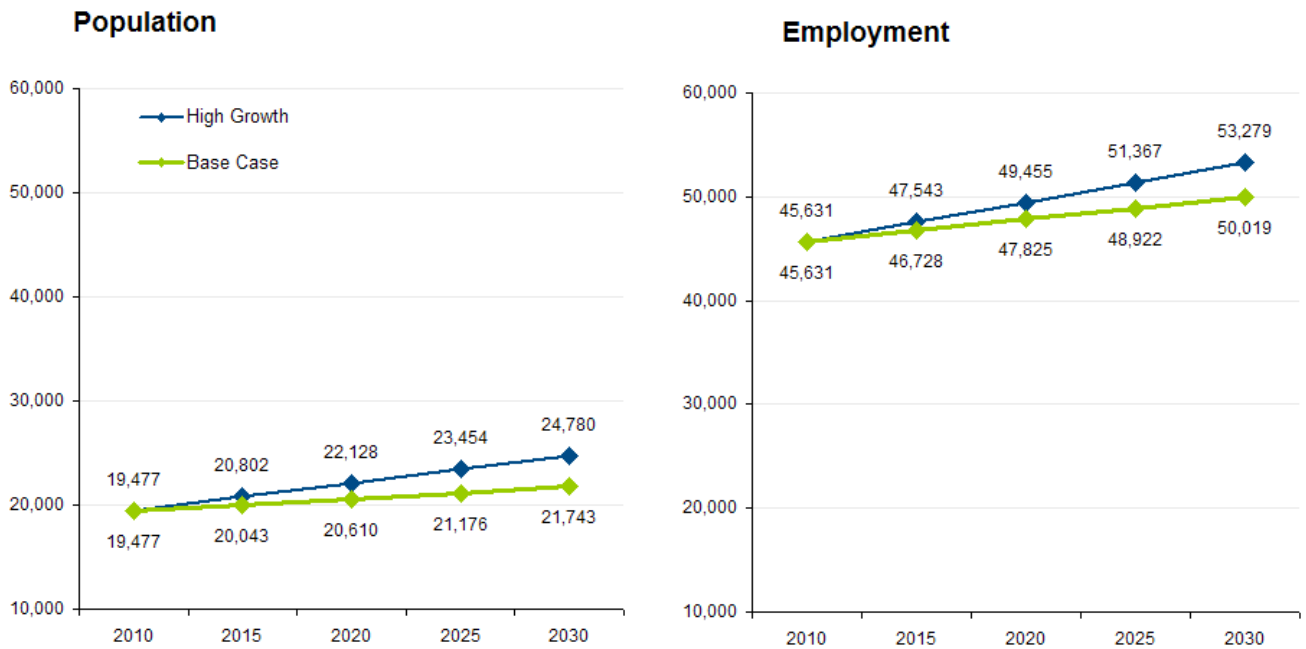
Redevelopment Potential. Overall, there is significant potential for the modern rail line to spur urban scale, TOD adjacent to the proposed line, as shows in Figures 4 and 5.

Three redevelopment scenarios were developed in order to model potential demographic changes in the corridor: the Base Case (using MRCOG existing forecasts)²; a high growth or modern rail scenario; and moderate growth scenario. The high growth scenario assumes that the modern rail line is implemented along with most or all of the other conditions for success, and is based on a combination of MRCOG projections and the observed growth rates within successful central cities around the country. The moderate growth is simply an average of the base case and high growth scenarios. It was developed for the purposes of modeling ridership discussed earlier, but is not shown in the figures below.

As Figures 4 and 5 show, the impact of the modern rail line could be significant, and include (above the base case) approximately 6,300 more residents and employees, and 2.3 million more square feet of residential, commercial, and institutional development, valued at about \$450 million.³

While the high growth scenario represents a somewhat ambitious goal, there is no reason why the City cannot achieve it. Overall, the high growth scenario represents an annual population growth rate of approximately 0.8 percent throughout the corridor, while Bernalillo County is expected to grow at 0.9 percent annually through 2030, and the region will grow at a 1.4 percent rate during the same period.

Figure 4. Demographic Growth in the Sunport Modern Rail Corridor



Source: MRCOG, Leland Consulting Group

² 2030 Socioeconomic Forecasts, Mid-Region Council of Governments (MRCOG), 2007.

³ See Appendix A for details on these calculations.

Figure 5. Comparison of Base Case and High Growth (Modern Rail) Redevelopment Scenarios



Source: MRCOG, Leland Consulting Group

In other words, when measured in terms of population growth, the high growth scenario is somewhat conservative—it is based on the expectation that this central urban area, designated for high growth, will still have a lower growth rate than the City and metro area as a whole. In fact, demographic analyses show that the country’s most successful central urban areas can grow considerably faster than their respective cities and metro regions.⁴

Redevelopment Evaluation by Alignment Segment. Redevelopment success will not be uniform or automatic throughout the corridor: land uses along the modern rail line’s alignment vary widely today, and will probably vary widely in the future. Many of these key differences are outlined in Figure 6 and explained in greater depth below.

Segment 1 – Central Avenue. Compared to the other alignment segments, and nearly every other part of the City, Central Avenue currently has the greatest concentration of residents, employees, and major activity centers—including downtown, the ATC, EDO, and the UNM Campus. Its prominent position at the center of the region can be expected to strengthen, because urban-scale residential and commercial development tend to be attracted to areas where development already exists. Urban residents want to be close to work, school, retail, and other amenities; likewise, employers seek to locate near their clients, customers, suppliers, and collaborators. For these reasons, the net new dwelling units and employees expected in this segment (under the high growth scenario) are greater than those of other segments.

The planning framework on this alignment segment is, in general, very supportive. The *Comprehensive Plan* designates Central as one of the City’s only east-west major transit corridor, and a number of sector and district plans (including *Downtown 2010*, *Nob Hill Highland Sector*

⁴ “Downtown Rebound,” Sohmer and Lang, Fannie Mae Foundation/Brookings Institution, 2001; and other publications.

Development Plan, and others) call for mixed use and higher density development along Central. One caveat, however, is the height allowed by these plans. Beyond downtown, parcels located directly on Central are often allowed to rise up to three, four, or five stories, while those on side streets are often limited to a single story. In many cases, development at these heights would result in considerable additional density – however, it will not allow the residential or commercial densities achieved in the new urban districts of modern rail cities such as Tampa or Portland.

Segment 2. University-Yale Couplet. The City’s just-completed South Yale Sector Development Plan provides a strong planning framework for the redevelopment of Alignment Segments 2 and 3, and an additional market-based evaluation of urban-scale residential and commercial growth in the area. The market analysis completed for the plan concludes that there is strong demand for residential units in the corridor due to the area’s central location, proximity to UNM and CNM, and healthy surrounding neighborhoods. For the purposes of this report, the total annual demand of 100 units per year throughout the South Yale corridor has been split between Alignment Segment 2 (65 units annually) and Segment 3 (35 units annually) based on site surveys.

Figure 6. Existing Conditions, Market Demand, and Activity Centers by Alignment Segment

Attribute	Alignment Section		
	1 - Central Ave.	2 - Univ./Yale Couplet	3 - South Yale
Existing Conditions			
Population (2010 estimate)	8,728	8,066	2,683
Employment (2010 estimate)	28,048	11,765	5,817
Planning Framework	Very Strong Max heights may limit growth	Strong Outcomes dependent on UNM Little City control	Strong Max heights may limit growth
Current Land Use	Mixed use, residential, commercial, and institutional Mostly urban grid Densest part of city	Large lots Large public ownership	Commercial corridor, residential side streets Many small, narrow lots
Right of Way	Mostly 4 lanes, plus turn lanes 3 lanes downtown	Mostly 6 lanes, plus turn lanes Very large streetscapes, not pedestrian friendly	3 traffic lanes No on street parking (detrimental to commercial development) Streetcar could slow traffic
Market Demand			
Residential	Near term Demonstrated demand	Near or Mid Term Highly dependent on UNM	Mid to Long Term Market and physical challenges
Potential new dwelling units per year	95	38	20
Commercial/Institutional	Near term Demonstrated demand	Near or Mid Term Highly dependent on UNM	Mid to Long Term Market and physical challenges
Potential new employees per year	231	102	50
Activity Centers/Ridership Generators			
Primary	Downtown Alvarado Transit Center Convention Center Events Center (planned) Presbyterian Hospital EDo UNM Main Campus Other residential neighborhoods	UNM Main Campus UNM South Campus (sports facilities) UNM parking lot CNM Neighborhoods	Sunport Neighborhoods
Secondary			Loma Linda Community Center Hotel cluster

Source: Leland Consulting Group, Fehr & Peers

Among the goals of the Plan are to “encourage more density to increase commercial services,” and to “allow mixed use, but ensure that commercial development is a priority.”

Figure 7 shows two images from the plan: an illustration of an improved Yale Boulevard intersection, with mixed use redevelopment and improved sidewalks and streetscapes at right; and a section view of a the new plan for Yale Boulevard near Ceasar Chavez, with space for on-street parking and extended (bulbout) sidewalks. If implemented together, the modern rail line *and* the physical and regulatory changes envisioned by the Plan could have significant positive impacts on the potential for redevelopment in Segments 2 and 3.

To a far larger degree than any other public or private institution, the decisions made by the UNM will determine the character of alignment segment 2 in the coming decades. The 2009 update to the UNM Campus Master Plan will be complete later this year after several years of intense work, and can be expected to bring major changes to the Main Campus (north of Central) and South Campus (south of Central). Two major changes in direction for this plan update are an attempt to create more robust physical linkages between the North, Main, and South Campus areas, and to create a “live-learn-play-work environment,” appealing to resident students and others. Although the final plan has not been published, the UNM Planning and Campus Development Office has made clear that large-scale, transit-oriented redevelopment is planned for the South Campus, which includes the UNM Stadium, Arena (“the Pit”), UNM Research park, and other properties. The University plans major physical improvements to the Stadium and Arena, though seating and capacity may not increase dramatically. More significant for the modern rail system, perhaps, are the acceleration of new development at the University’s Research Park (north of Cesar Chavez and west of University) and the transfer of a major student services center from the Main to South Campus. Both could bring about a major change in the physical environment and thousands of new daily modern rail system riders.

Figure 7. Images from the South Yale Sector Plan



Source: City of Albuquerque

Alignment Segment 3 - South Yale. The population and employment base of Segment 3—the areas surrounding Yale Boulevard south of Cesar Chavez Avenue—is considerably smaller than those of Segments 1 and 2. Similarly, while there is potential for residential and commercial redevelopment, it will require more public planning and investment here than on the other segments, and the opportunities are more likely to materialize in the medium and long terms.

Of course, the main destination in this area is the Albuquerque International Sunport. The adjacent residential neighborhoods on both sides of Yale will also generate some ridership for the modern rail line.

Redevelopment opportunity sites include several agglomerations of commercial sites along Yale, and the City's Loma Linda Community Center, where additional uses could be added. Since many of the buildings on the Yale Business Park, including several hotels, were built recently, they unlikely candidates for near-term redevelopment.

Redevelopment will be somewhat more difficult here because "urban amenities" – particularly existing pedestrian oriented urban-scale retail, residential, and employment centers, are less prevalent. The area is also further from the City's center of gravity, and generally has lower incomes and home prices, making it less desirable for urban infill. The lack of on-street parking also makes sidewalk-fronting commercial uses difficult.

However, the changes proposed by the South Yale Plan – such as drastic improvements to the streetscape, the addition of on-street parking, and greater allowed densities – would significantly increase the likelihood of near-term redevelopment of this area. The use of "Great Streets" program funding could bring about these streetscape changes.

In order to realize the vision of the South Yale Plan and modern rail system, the City should work proactively to identify specific redevelopment sites, attract developers and key anchor tenants, make public improvements, establish incentives for development (such as TIF or TIDD districts, fee or tax abatements, and other tools), and address the other conditions for success.

Tourism and Convention Impacts

Tourism and conventions are a large and extremely important part of the economies of Albuquerque and New Mexico. The experience of other cities with modern rail systems clearly shows that, if implemented along with other conditions for success, the modern rail line is likely to have a significant positive impact on those industries.

Tourism is currently very big business in Albuquerque and New Mexico, but the potential for expansion remains. According to the Albuquerque Convention and Visitor's Bureau (ACVB), travel and tourism is Albuquerque's second largest private industry, generating more than \$2.0 billion annually. Albuquerque is host to approximately five million visitors each year, which produce over \$30 million in local taxes, \$100 million in state taxes, and support approximately 23,000 jobs. Measured by visitor volume, Albuquerque is the state's most popular tourist destination, attracting approximately 40 percent of the state's total visitors.

The connection between the Albuquerque and Santa Fe tourism industries is also important. These two cities are the first and second most visited destinations in the state, and are now connected by the Rail Runner. A further high-quality connection between ATC and the Sunport could improve the overall quality of experience for visitors of both cities and encourage longer or additional visits.

A 2006 study commissioned by the ACVB determined that the City's overall tourism industry had the potential to double to \$4 billion if the City could realize the Destination Master Plan goals discussed below.

Industry literature and interviews clearly show a positive, reinforcing relationship between tourism, high-quality public transit, and modern rail systems in particular, and downtown and central city revitalization. This report draws on interviews with tourism and transit professionals in Albuquerque, Santa Fe, Tampa, Little Rock, and Portland, and a review of printed and online industry literature.

Tampa, Florida's modern rail line is the most tourist oriented of those reviewed for the this report. It connects a cruise ship terminal, the City's convention center, major sports facilities, and emerging high density residential, entertainment, and historic districts. It was initially intended to be a tourist mover. According to Tom Keating, of Ybor City Chamber of Commerce, the Tampa modern rail is, "like Riverwalk in San Antonio. It gives convention organizers a reason to choose Tampa."⁵ Tampa's modern rail ridership has grown every year, with about 280,000 tourist riders annually, or 65 percent of total ridership.

Tampa also demonstrates that Albuquerque's tourism and convention markets have room to grow. The Florida city hosts nearly 500 conventions and 500,000 convention attendees per year, approximately 30 percent and 160 percent more than Albuquerque, respectively. Of course, no



⁵ *Street Smart: Streetcars and Cities in the Twenty First Century*, APTA, p. 50.

tourism numbers are directly transferable from one city to another. Tampa, for example, is a larger metropolitan area, is more accessible to east coast markets, and has a built-in tourist base driven by the massive cruise ships that dock directly adjacent to the modern rail line.

During Portland's 2007-2008 evaluation of a 3.3-mile modern rail line extension, tourists were seen as a group likely to generate high ridership, and more disposed to ride transit. Planners at the city's transit agency, city, and regional government forecast that the attributes of the modern rail line – attractive and modern design, clear alignment and destinations, and frequency – would be particularly appealing to conventioners and tourists.⁶ This project would extend the modern rail from its current services areas in downtown Portland to the city's convention center, arena, a popular museum, and other destinations.

While Little Rock's tourism market is considerably more modest, its modern rail line has also had a positive impact there, primarily by "connecting the dots" between the Airport, River Market District, Clinton Library, riverside parks, museums, offices, and other urban destinations. According to the American Public Transportation Association, it is the City's tourist heart: "The River Market has become the heart of downtown Little Rock's cultural, entertainment, retail, and residential district, and is lined with galleries and shops, piano bars, restaurants and hotels."⁷

A 2008 *San Francisco Chronicle* column ("Streetcars Too Popular for their Own Good") noted that regular commuter customers were getting passed up because the cars are full of tourists. In fact, transit staff say that, "the vintage [street]cars carry some 21,000 riders a day, more than all three of the more-famous cable car lines put together."⁸ It is important to consider that not all of these riders are tourists, and almost all tourists likely visited the city because of its comprehensive package of urban amenities – not the modern rail line alone.

The converse of these experiences is also true: The deficiency of high-quality transit in Albuquerque is detrimental to the tourism business. According to the ACVB's 2008-09 Marketing Plan: "In many cases, due to a lack of good public transportation, we need to offer buses to Old Town or Nob Hill for evening functions. [The Opportunity Fund] became necessary when our competition could offer numerous hotels within walking distance of the convention center and had a vibrant downtown with a variety of restaurants, shops and cultural venues. Albuquerque, at this writing, cannot offer as appealing a convention package as other southwest destinations."

Comparing Conventions to all Tourism. While both the overall tourism trade, and the convention and event business (a subset of tourism) are important to Albuquerque and other cities, conventions and events make up a modest part of all tourism. For example, convention attendees make up about four percent of all visitors to the city, and the total economic impact is about \$78.1 million, also four percent of all tourism spending in the city. The modern rail line is likely to have a more direct and larger impact on conventions and events than on all tourism.

⁶ Interview with Joe Recker, Transportation Planner, TriMet.

⁷ *Ibid*, p. 52.

⁸ "S.F. streetcars too popular for their own good," *San Francisco Chronicle*, C.W. Nevius, Tuesday, August 5, 2008.

Albuquerque is investing in its downtown and central area and has a clearly defined strategy to market itself holistically as a diverse and attractive cultural destination. With the 2006 Albuquerque Destination Master Plan, the ACVB and numerous public and private partners clarified their goal to improve and market the Albuquerque experience, particularly the city's culture and heritage, and climate and landscape. A very important part of this plan is improvements to the overall vitality of central Albuquerque itself. The strategy calls for a clearer City of Albuquerque brand; enhancement of the City's key cultural and historical sites such as Old Town, Civic Plaza, and Route 66; and a "Modern Trolley System" to connect the City's "string of pearls."

The ACVB's three top priorities are an Events Center (described below), the ongoing revitalization of downtown, and high-quality mass transit, ideally with connections to the Sunport, downtown, and other popular destinations such as Old Town. The Bureau sees these improvements as a "three legged stool," without which the local tourism industry will be unable to expand to its potential. Other goals include increasing the number of "commitable" hotel rooms downtown and increasing safety.

The ACVB's 2008 marketing plan states that, "downtown revitalization will be one of the most crucial selling points that will be used in attracting citywide conventions. The mission of the downtown Action Team is to make Albuquerque's downtown the best mid-sized downtown in the country, integrating Downtown, Old Town, and the Bio Park into a dynamic pedestrian friendly center for the arts, entertainment, dining, culture, business, and urban housing."

Many improvements have dramatically increased downtown's appeal, including new residential development (including the Anasazi, Gold Avenue Lofts, and others), entertainment (the Century Theater complex), hotels (the soon-opening La Posada), and numerous improvements to the streetscape and safety. The Albuquerque Events Center, now in the planning stages, would add several major draws to downtown, create synergies with other uses, and reinforce the positive impacts of the modern rail system. The proposed event center would be located on Central Avenue between Broadway and Second Street, and include a 12,000 seat multi-purpose arena, a 500-room hotel, 35,000 square feet of meeting space, and retail and residential components.

This approach to downtown revitalization and tourism is in keeping with the experience of convention industry experts, who emphasize that for urban destinations, the quality of the urban experience is the city's most valuable selling point:

"For more sophisticated meeting groups, the city itself is generally the attraction. Cities such as San Francisco and New Orleans have become known as great places.... Cost is obviously a major issue for every meeting planner, but it is not so simple that the lowest-cost destination becomes the most attractive. Each association analyzes the trade-off between cost and revenue potential.... Those cities known to be attractive as fun destinations to individual delegates will in turn create more revenue for the association in spite of somewhat higher costs. For example, San Francisco is a very high cost destination in North America, but many groups get their biggest draw ever each time they meet in that city."⁹

⁹ "Economic Impact of Convention and Conference Centers," Economic Research Associates, 1998, presented at the National Council for Urban Economic Development.

Economic Impact. Like downtown revitalization itself, the appeal of urban tourism destinations is holistic and depends on the appeal of a wide variety of individual sites, activities, and experiences. Thus, it is difficult to isolate the precise amount by which the modern rail alone line will grow the tourism and convention businesses in Albuquerque.

Table 2 shows a range of probable outcomes, measured by economic impact (direct spending plus the state’s established multiplier effect of 29 percent), jobs created, and tax revenues. The modern rail system, when implemented with other conditions for success, can be expected to have a net positive impact of between five and 10 percent on the convention and events business, and an impact of between one and two percent on tourism overall. Thus, the total net economic impact could total between \$2.4 and \$51.6 million in new spending per year, and be accompanied by increases in jobs created and taxes collected. Note, however, that there is room for considerable additional expansion, if other projects such as the Events Center and ongoing downtown revitalization are pursued. According to analysis commissioned by the ACVB, this could result in a 100 percent increase in both conventions and tourism.¹⁰

Table 2. The Modern Rail Line’s Annual Impact on Tourism and Conventions in Albuquerque

Tourism Metric	Conventions	Net Increase		Tourism	Net Increase	
	City Center	5%	10%		1%	2%
Visitors	54,758	2,738	5,476	4,700,000	47,000	94,000
Economic Impact	\$48,514,320	\$2,425,716	\$4,851,432	\$2,580,000,000	\$25,800,000	\$51,600,000
Jobs Created	546	27	55	34,185	342	684
State Taxes	\$3,142,564	\$157,128	\$314,256	\$38,700,000	\$387,000	\$774,000
Local Taxes	\$736,366	\$36,818	\$73,637	\$129,000,000	\$1,290,000	\$2,580,000

Source: ACVB, Leland Consulting Group

While the proposed Sunport modern rail alignment evaluated in this report will certainly be a boon for tourists, conventioners, and tourism professionals in Albuquerque, this alignment does not serve all of Albuquerque’s primary tourist attractions. Other attractions beyond this alignment include Old Town, the museum cluster northwest of Old Town, the Bio Park, and Nob Hill/historic Route 66. In order to maximize the modern rail line’s positive impacts on tourism, consideration should be given to extending the line to those destinations, possibly as a future second phase.

¹⁰ Interview with Dale Lockett, President and CEO, ACVB.

Sustainability

High-quality public transportation and adjacent transit-oriented development can have a significant positive impact on the local and global environment, which can be measured through a decrease in a number of pollutants, including the primary global-warming gas, carbon dioxide. Mayor Martin Chávez and the City of Albuquerque have identified sustainability as a high priority for the City.

While a clear case can be made that the modern rail line would have a positive impact on sustainability, this report does not attempt to quantify that impact in terms of carbon dioxide or other emissions, or other sustainability metrics. Further detailed analysis taking into account both the specific ridership and redevelopment impacts of the Sunport modern rail line, and regional transportation and land use trends, would be necessary in order to quantify the effect.

The City of Albuquerque has set sustainability goals in the following areas, including: sustainable water, green buildings, energy and emissions, forestry and agriculture, land use, recycling and waste reduction, and leadership, education and outreach. One of the primary sustainable transportation metrics is an 85 percent increase in ABQRide ridership between 2004 and 2012. By creating a reinforcing cycle of greater ridership and compact redevelopment throughout the Sunport alignment, the modern rail system could certainly bring the City closer to meeting this goal.

There is now considerable evidence that urban form and transportation are among the most significant determinants of carbon dioxide and other emissions, and other sustainability metrics. According to the American Public Transportation Association, “public transportation produces 95 percent less carbon monoxide (CO), 90 percent less in volatile organic compounds (VOCs), and about half as much carbon dioxide (CO₂) and nitrogen oxide (NO_x), per passenger mile, as private vehicles... [public transit provides] significant environmental benefits – by reducing smog-producing pollutants, greenhouse gases and run-off from paved surfaces that degrade the water supply, and by conserving ecologically sensitive lands and open spaces.”¹¹

According a report on climate change by the Urban Land Institute, “planning researchers and practitioners have documented the fact that residents of compact, mixed-use, transit-served communities drive less than their counterparts in sprawling communities.”¹² For example, the average resident of one of the nation’s ten most sprawling metropolitan regions travels 28 percent more vehicle miles than a resident of one of the nation’s ten least sprawling regions. Further, “better community planning and more compact development help people live within walking or bicycling distance of some of the destinations they need to get to every day – work, shops, schools, and parks, as well as transit stops.” If implemented in keeping with existing plans, the residential and employment centers that will emerge on Central Avenue, UNM properties, and along Yale Boulevard will exhibit many or all of these compact development features.

¹¹ “Public Transportation: Benefits for the 21st Century” American Public Transportation Association (APTA), 2007.

¹² *Growing Cooler: Evidence on Urban Development and Climate Change*, Urban Land Institute (ULI), 2008.

Other Benefits

The modern rail system will offer a number of other benefits to the users of the line and citizens of the City at large that are not analyzed in this report. These benefits have been documented in several nationwide reports, including *Rail Transit in America: A Comprehensive Evaluation of Benefits*. That study found that, on average, cities that have extensive rail transit systems have lower per capita transportation expenditures, lower per capita vehicle mileage, lower transit operating costs, fewer traffic fatalities, and a population that tends to drive less as a percentage of all trips.¹³ These other benefits are likely to include:

- **Health.** High quality transit reduces emissions, traffic crashes and fatalities, and facilitates neighborhoods in which residents can walk and use other active modes of transportation.
- **Fiscal impacts.** High quality transit reduces long-term regional infrastructure costs by encouraging compact development and utilizing existing infrastructure.
- **Growth management.** High quality transit reduces sprawl, preserves agricultural land and open space.
- **Affordability.** Nationwide, transportation ranks second behind housing amongst households' largest expenditure. By significantly reducing transportation costs, high quality transit can leave households with more money to spend on food, education, healthcare, and other necessities.
- **Safety.** Extensive rail transit networks are correlated with a lower rate of accidents involving automobiles and pedestrians.

¹³ Victoria Transport Policy Institute, 2004.

Costs

Capital Costs

Cost Per Mile

The capital cost previously estimated for the Albuquerque modern rail project is \$30.3 million per double track mile or \$15.1 per single track mile (adjusted to 2010 dollars).¹⁴ Based on a review of the cost estimates, conducted by HDR Inc. in 2006, and a comparison of existing modern rail systems that have similar operating environments (Portland and Seattle), the capital cost estimates for the Albuquerque project appear reasonable and appropriate.

The capital cost for a single track section running on parallel streets will be similar to the double track segments, and thus, projections based on double-track miles are the same as those based on single-track miles. Single track sections such as Yale and University Boulevards will, however, require some additional mobility and traffic control during construction, but this is not expected to affect the project's overall costs.

Total System Cost

At a total alignment length of 4.2 miles, the estimated modern rail system cost is \$127.2 million.

The Portland system cost approximately \$25 million per mile (2001 dollars) and the Seattle system cost was recently constructed for approximately \$40 million per mile (2007 dollars). The Albuquerque modern rail line is expected to cost considerably less than the Seattle line for a number of reasons. First, shorter lines such as the 1.3 mile Seattle Streetcar cannot spread certain fixed costs (for example, a maintenance facility) over many route miles. Second, lines that travel entirely through downtowns incur more costs for expensive underground utility relocations. Third, station and vehicle amenities on the Seattle line are of a very high quality, and less extensive station area improvements are possible. Finally, "extraordinary costs," such as bridge crossings, can add significant amounts. In summary, the context of the alignment is a major influence on the construction cost.

Albuquerque may be able to save a significant amount if the City is able to build the line soon (in 2009 or 2010) because of the nationwide recession and its impact on construction costs. Many materials that will go into the construction of the modern rail line—steel, concrete, and the vehicles themselves—are likely to cost significantly less in the short term due to the downturn in commercial and residential construction. It is unclear when construction costs will begin rising again.

Based on the detailed cost estimate for the project there are several areas where capital costs could be shared with ongoing capital improvement program within the City of Albuquerque. This could include upcoming stormwater improvement projects, utility upgrades, street resurfacing, street striping, and streetscape plans. Additionally, modern rail line investments could be coupled with investments made as a result of the "Great Streets Facility Plan." The Central alignment overlaps with several potential Great Street segments proposed in the plan.

¹⁴ This cost estimate includes track, stops, traffic signals and train control, utilities and roadway reconstruction, power system, vehicles, a maintenance facility, design and construction contingencies, right of way requirements, and a project reserve.

Based on the final operational details, it may be possible to share some of the existing Rapid Ride stops with the modern rail line. This would create “super stops” that would maximize existing infrastructure and minimize capital costs at some station locations.

In addition, some of the peer systems used a phased approach, which could also be used in Albuquerque. For example, Portland has nearly finalized the fifth phase of its modern rail system. Thus, the first phase may be just one piece of a system that can be extended and improved upon in order to serve more destinations and riders. In Albuquerque’s case, the line could be extended along Central Avenue or elsewhere.

Subject to the final operating plan, it may also be possible to reallocate some capital funds earmarked for future ABQ ride bus routes that could be replaced by the modern rail system. Given the longer service life of a modern rail vehicle (Skoda vehicles are rated for 25 years) compared to a standard transit bus (Altoona tested 10 year) the reallocation of bus dollars could provide a long term capital cost savings.

Operating Costs

A total of nine operating scenarios were assessed as part of the initial modern rail planning effort. The scenario chosen for this peer analysis is most compatible with the median ridership estimate. The chosen scenario allows for 15 minute headways and connects Sunport International and ATC (scenario 1A). The annual cost to operate under this scenario is \$4.4 million.

Relative to peer systems, the Albuquerque modern rail system's annual operating budget anticipates lower than average cost per passenger mile. This lower cost is attributable to the high ridership generated by the system's above-average operations plan.

The operations plan does not specify if the modern rail system will be operated by ABQ Ride or a private contractor. Peer systems have used a variety of operation configurations to maximize their available operating budgets. These configurations can include public transit authorities, non-profit organization, and/or private contractors. Several peer systems offset their operation costs by implementing special services. This includes charters for special events during off-peak periods.

Based on final operation plans, it may be possible to shift operating funds from existing ABQ Ride routes that are discontinued when the modern rail system begins operating (66, 50, and 350).

Cost Benefit Evaluation

As Table 3 shows, the Sunport modern rail line rates as well as or better than the Central Avenue alignment evaluated in 2008, and other peer city alignments in most key metrics.

In terms of two key cost-benefit metrics – operations cost per passenger and investment leverage – the Sunport modern rail line fares very well. This analysis shows that, at an operations cost per passenger of \$2.05 basis, the Sunport modern rail line will fare better than the “Central Line” (previously proposed, from Atrisco to San Mateo) and better than all the peer cities’ lines with the exception of Portland, where a very high density of activity generators are clustered along a relatively short line.

Measured by investment leverage (total redevelopment value divided by the capital cost of the line), the Sunport line performs well, though not as well as the lines in Portland or Tampa, which have both been extremely successful in spurring redevelopment. Based on the evidence from urban revitalization efforts conducted around the country, any investment leverage ratio of 5.0 or above is considered a good return on public investment. Thus, the Sunport modern rail investment leverage of 7.4 is very positive. Because the redevelopment forecasts in this report are somewhat conservative, it is possible that over the long term Albuquerque could see redevelopment of the kind experienced along Portland and Tampa’s modern rail lines, and enjoy a comparable investment leverage.

Table 3. Cost-Benefit Evaluation of Sunport Modern Rail Line and Peer Systems

Attribute	Sunport Line ATC to Sunport	Central Line Atrisco to San Mateo	Peer Systems			
			Tampa	Little Rock	Seattle	Portland
Length (double track miles)	4.2	6.3	2.4	3.5	2.6	4.0
Cost (\$ Millions)						
Capital	\$127.2	\$190.8	\$53.0	\$27.2	\$52.1	\$100.0
Capital Cost Per Mile	\$30.3	\$30.3	\$22.1	\$7.8	\$20.0	\$25.0
Operations (2011)	\$4.4	\$4.4	\$2.4	\$0.9	\$2.0	\$4.8
Benefits						
Average Weekday Ridership	7,496	6,364	1,490	685	1,300	10,001
Annual Ridership ¹	2,153,473	1,828,275	435,000	200,020	330,000	3,476,764
Residential Growth (dwelling units)	3,064	3,549	3,687	N/A	N/A	10,212
Employment Development (sf)	1,911,963	1,947,567	N/A	N/A	N/A	5,400,000
Total Redevelopment Value (\$M)	\$966.4	\$1,059.3	\$1,000.0	\$200.0	N/A	\$3,500.0
Cost-Benefit Metrics						
Operations Cost Per Passenger ²	\$2.05	\$2.41	\$5.52	\$4.25	\$6.06	\$1.38
Capital Cost Per Passenger ³	\$59	\$104	\$122	\$135	\$158	\$29
Net New Residential Units Per Mile	730	563	1,536	N/A	N/A	2,553
Employment Redev. Per Mile (sf)	455,229	309,138	N/A	N/A	N/A	857,143
Investment Leverage ⁴	7.6	5.6	18.9	7.4	N/A	35.0

Source: Fehr & Peers, Leland Consulting Group

1. Ridership shown for Albuquerque is for the opening year; ridership for other lines is for the most recent year for which data is available. 2. Opening year operations cost divided by opening year ridership. 3. Capital cost for alignment section divided by opening year ridership. 4. Investment value divided by system capital cost.