A workshop was conducted on December 14, 2007 with various members of the consulting team and Mid-Region Council of Governments (MRCOG) in association with the Rail Transit Investments Evaluation Project (Project). The objective of the workshop was to review previous work completed as part of the Albuquerque modern streetcar project for reasonableness and appropriateness as it relates to the Project. During the course of the workshop the team evaluated the proposed ridership estimates, transit operation strategies, supporting land use policies, preliminary land use forecasts, capital construction costs, and operating costs associated with the Albuquerque modern streetcar project. The basis for the evaluation was constructed peer systems currently operating in North America.

The following themes emerged out of the workshop and subsequent work session. This information will be used during the course of the project as the basis for evaluating potential investments that would result from constructing the Albuquerque modern streetcar.

CAPITAL COSTS

- The estimated capital cost/mile for the Albuquerque modern streetcar project is approximately $25 million/mile. Based on peer comparison of constructed modern streetcar system that have similar operating environments (Portland and Seattle), the capital cost estimates for the Albuquerque project appear reasonable and appropriate. The Portland system was constructed for approximately $25 million/mile (2001 dollars) and the Seattle system was recently constructed for approximately $21 million/mile (2007 dollars).

- Vintage peer systems were also evaluated for comparative purposes. Vintage systems use historic vehicles and have slightly different operational needs compared to modern systems. There is a wide range of capital costs associated with vintage systems, but on average the system's cost approximately $11/mile. The cost differences are attributable to existing track in some locations and a lower overall cost for vehicles.

- Each of the systems used a variety of public and private funding sources to construct the system. The important consideration for the Albuquerque modern streetcar project is that each of the modern peer systems applied a phased approach to constructing the system. The initial phase of both projects served a specific travel market and was built as part of a larger system.

- 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 storm water improvement projects, utility upgrades, street resurfacing, street striping, and streetscape plans.

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

- A significant capital cost savings could result from securing costs or purchasing materials that would be used in later phases of the project. Specifically, any materials that are influenced by the rising cost of steel.

- All of the peer systems have used a "toolbox" of financing tools such as improvement districts, private sector development contributions, station sponsorship, and corporate sponsorship to supplement public funding sources.

- Capital funding may also be available from innovative federal programs that promote "green building" techniques. This could include reconstructing storm water drainage with swales or rebuilding streets with recycled roadway materials.

- Based on 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 streetcar. Given the longer service life of a streetcar (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.

- Peer systems have shared the capital costs for traffic signal timing controller hardware, detection equipment, and signals with regional programs funded under the Congestion Mitigation and Air Quality (CMAQ) program. The grants could be used to improve motor vehicle operations along Central Avenue and improve the streetcar's on time performance. It may also be possible to fund new equipment in conjunction with the existing MROCG corridor optimization, congestion management process, or intelligent transportation programs.

OPERATING COSTS

- A total of nine operating scenarios were assessed as part of the initial streetcar 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 Tingley Beach (scenario 1C).

- Relative to peer systems, the Albuquerque streetcar's annual operating budget anticipates lower than average cost per passenger mile. This lower cost is attributable to the system's above average operations plan, track length at build out, and anticipated ridership.

- The operations plan does not specify if the streetcar 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.

- As with capital costs, all of the peer systems use a variety of funding techniques to cover operating costs. These can include passenger fares, special assessment districts, parking revenue, federal funds, regional transit taxes, naming rights, and advertising.

- Based on final operation plans, it may be possible to shift operating funds from existing ABQ Ride routes that are discontinued when the streetcar begins operating (66).

RIDERSHIP

- **Ridership projections are important to the system, but not a definition of success.** The opening-year ridership estimates of the Albuquerque Streetcar fall into the very high end of the range indicated by peer cities, some of which have much higher densities than Albuquerque. Since Federal Transit Administration (FTA) funds are not being pursued for the construction of the Albuquerque modern streetcar project, ridership criteria is not a critical factor for funding. However, the ridership forecasts are likely to be a performance measure that the public and elected officials use to gauge the potential success of the system. If future ridership analysis is conducted, for phasing purposes, the analysis should examine peer streetcar systems to gauge comparable densities, diversity of land uses, urban design characteristics, distance to interconnected transit and destinations (known as the D's).

- **Typical streetcar destinations are well served by the proposed streetcar lines and they will positively contribute to the system's function**. In the context of constructed streetcar systems in North America (vintage and modern), the Albuquerque modern streetcar project will provide access to popular destinations commonly found along successful streetcar routes. These destinations include downtown, established residential neighborhoods, the University of New Mexico, the Sunport Airport, the RailRunner station, sport stadiums, and job centers. The destinations optimize the system's ability to achieve a high level of ridership, but may introduce operational challenges during overlapping events, for example stadium events. The Central Avenue and Sunport corridors also have adequate destinations as individual corridors, in the event the streetcar lines are phased.

- **The demographic forecasts used in the ridership forecast are substantially different than the approved MRCOG growth forecasts in some areas adjacent to the streetcar**. A preliminary review of the land use inputs used in the ridership forecasts shows an assumed increase in jobs and dwelling units near Albuquerque Sunport much higher than what is found in the MRCOG approved forecasts for 2030. In later phases of the project this and the Central Avenue and Sunport corridor will be evaluated to determine if the altered forecasts are achievable. Another important consideration is that the Sunport

corridor is a major contributor to forecasted ridership, which in all likelihood would be a future extension and not part of the initial operating segment.

- **The ridership forecasts appear to be based on employment and population inputs only – similar to a resident/commuter traffic model**. The forecasts do not include ridership from lodging room-nights, event facilities, visitor attractions or retail destinations. Although some of these land uses are not critical to the traditional funding or cost-benefit analysis methods, they will be important for the City's own internal purposes of gauging success over time.

- **Some ridership from current transit routes can be expected to shift to the streetcar.** Given the origins and destinations of the existing bus riders in the Central Avenue corridor (Rapid Ride and Route 66), transferring passengers to the streetcar at the extents of the system introduces a time penalty that may not be acceptable to some riders. However, short trips within the core area of the Central Avenue corridor could be served by the streetcar during peak and off-peak periods. The current ridership on bus routes in the Central Avenue corridor (>10,000/day) also introduces capacity challenges for the streetcar, if large portions of the existing ridership is transferred to the streetcar. Any refinements to the ridership estimates and operating plans should carefully address: 1) the most effective method of restructuring the routes and stops on Rapid Ride and Route 66 to integrate with rather than duplicate the streetcar service, and 2) the distinction between net new ridership and total streetcar ridership that includes shifts from Rapid Ride and Route 66.

- **Ridership is likely to come from new trips by current residents and employees within 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 other intra-corridor transportation, and as a unifying theme providing identifiable and reliable accessibility to a variety of compatible activities, a streetcar is likely to induce local transit travel by existing inhabitants. It may also induce development of transit-oriented residences and businesses, attracting new inhabitants who are favorably 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 streetcar will supplement existing bus service (Rapid Ride and Route 66) and walking in the Central Avenue corridor, to capture new riders who are not currently riding buses for commute and non-commute trips and new residents and workers associated with new development near the streetcar line. In addition, peer communities show a strong relationship between increased private investment and fixed guideway rail investments that does not occur to the same degree as other transit investments. Induced land use changes such as transit oriented development may also contribute to additional ridership not currently accounted for in the ridership estimate. Subsequent work tasks will address future land use scenarios.

- **The purpose of the streetcar and the ridership will evolve over time.** Given the routing alternatives, destinations, and existing transit services in the area the streetcar will serve many different purposes over time as the area redevelops. If the streetcar projects move forward, target ridership markets and the streetcar's

role in the broader transportation system need to be defined to reflect the various stages of the system's completion. Primary among these are the streetcar's role in: restructuring existing bus service in the corridors, providing access/egress service for RailRunner, incentivizing transit-oriented business investment in the corridors, supplementing or replacing current forms of intra-university transportation, becoming a visitor-oriented amenity connecting airport hotels with downtown businesses and cultural destinations.

A. Streetcar System Comparison

(systems >55,000 annual passengers)

	VINTAGE				MODERN			
	Kenosha	**Tampa**	**Little Rock**	**Memphis**	**Tacoma**	**Seattle^**	**Portland**	**Albuquerque****
SYSTEM DETAILS								
Year Completed	2000	2002	2004	1993	2003	2007	2001	2009
Vehicle Type	vintage	vintage	vintage	vintage	modern	modern	modern	modern
Track Length (miles)	1.7	2.4	3.5	7	1.6	2.6	4	8
Stations	17	10	14	24	5	11	42	26
Streetcars	5	9	5	18	3	3	10	9
ROW	mixed flow	mixed flow	mixed flow	mixed flow	dedicated ROW	mixed flow	mixed flow	mixed flow
Routes	1	1	2	3	1	1	1	2
OPERATION DETAILS								
Fares	$0.25	$2.00	$0.50	$0.60	FREE	$1.50	FREE to $1.70	$1.00
Service Hours	Summer M-F 10a-7p Sa-Su 10a-5:30p Winter M-F 10a-2p	M-W 11a-10p Th 11a-11p F 11a-2a Sat 9a-2a Sun noon-8p	M-W 11a-10p Th-Sa 11-midnight Sun 11:00a-5p	M-Th 6a-11p F 6a-1a Sa 9:30a-1a Sun 10a-6p	M-F 5a-8p Sa 8a-10p Su 10a-8p	M-Th 6a-9p F-Sat 6a-11p Sun 10a-7p	M-Th 5:30a-11:30p F 5:30a-12:00am Sat 7:15a-11:45p Sun 7:15a-10:30p	M-F 5:30a-12:00a Sat 7a-12:00a Sun 7a-12:00a
Total Weekly Service Hours	60	85	78	110.5	99	103	122.5	126.5
Peak Headway (minutes)	30	15	20	10	10	15	13	15
RIDERSHIP DETAILS								
Annual Ridership	58,000	435,000	200,020	1,000,000	740,000	330,000	2,365,200	2,073,200
Daily Ridership	199	1,490	685	3,425	2,534	1,130	8,100	7,100
CAPITAL COST DETAILS								
Capital Cost (millions)	$5	$53	$27	$101	$81	$52	$100	$228
Capital Cost per Mile (millions)	$3	$22	$8	$14	$51	$20	$25	$28
Capital Cost per Annual Rider	$86	$122	$135	$101	$109	$158	$42	$110
OPERATION COST DETAILS								
Annual Operating Cost	$300,000	$2,400,000	$775,000	$3,200,000	$3,940,000	$2,000,000	$4,800,000	$5,100,000
Cost Per Passenger	$5	$6	$4	$3	$5	$6	$2	$2
Cost per Passenger per Mile	$3	$2	$1	$0.5	$3	$2	$0.5	$0.3
RIDERSHIP GENERATORS*								
Stadium (seats)	0	20,500	18,000	20,000	23,000	0	0	72,000
International Airport (mill annual pass.)	0	0	2.1	0	0	0	0	6.4
University (enrolment)	0	0	0	0	2,292	0	24,000	26,000
Convention Center (sq ft)	10,000	600,000	33,000	350,000	120,000	0	0	600,000
Medical Center/Hospital (employees)	0	0	0	3,000	0	2,800	4,500	3,400
Other Destinations	Harbor Park	Cruise Port	Clinton Library	Beal St	State Museum	Seattle Center	Theater District	Historic Plaza
RAIL TRANSIT CONNECTIONS*								
Commuter Rail	✓				✓			✓
Light Rail							✓	
Monorail						✓		
PARK AND RIDE FACILITIES*								
Surface Parking	✓			✓				TBD
Parking Structure		✓	✓		✓		✓	TBD
CBD PARKING								
Off Street - Publicly Operated	1,000	16,000	0	3,700	2,500		4,000	1,500
Maximum Daily Parking Rate (public facilities)	$1.50	$9.50	$0.00	$12.00	$12.00		$13.00	$8.00
FINANCING TOOLS								
Capital	FTA 5309 Tax Increment Financing	CMAQ FTA 5309 State DOT City of Tampa Port Authority Development Impact Fees	Federal Small Starts City of North Little Rock City of Little Rock Pulaski County	FTA 5307 City of Memphis TDOT MATA	Regional Transit Tax	Local Improvement District State and Fedral Grants City Property Sale Proceeds Private Contribution	Parking Revenue Local Improvement Districts Development Agreements Federal (Non Transportation) City of Portland	TBD
Operating	Fare Box Federal State	Fare Box Special Assessment District Endowment from Naming Rights Advertising State Block Operating Assistance FTA CMAQ Tampa Port Authority	Fare Box Federal Cities/Counties	Fare Box	Regional Transit Tax	Fare Box FTA 5307/5309 Streetcar and Station Sponsorship Bulk Pass	TriMet Parking Revenue Fare Box	TBD

Notes:
* within 1/4 mile of a stop
^Based on Seattle Streetcar Network and Feasibility Analysis prepared by Parsons Brinkerhoff, Nelson Nygaard Consulting Associates, and URS Corporation.
Based on South lake Union Streetcar Capital Financing and Operating and Maintenance Plan prepared by the Office of Policy and Management, City of Seattle.
** based on 1C operating plan and 2009 ridership forecast assuming $1.00 fares
Based on information from American Public Transit Association, Transportation Research Board, and National Transit Database
Additional information obtained from transit agencies, parking operators, municipalities, and organizations via phone in December 2007 by Carlos Hernandez, AICP - Fehr & Peers

B. Supporting Strategies to Achieve Ridership

	Dwelling Units*	Jobs*	MRCOG Forecast Year	Streetcar Service	Bus Route Operations	Destinations Served	Parking	Redevelopment Policy Tools	Ridership Range	Peer Ridership Comparison
Baseline Scenario	15,000	53,000	2004	10 stops 4 vehicles 10 min peak service	Operate RT 66 and Rapid Ride	Downtown Core	Paid and structured in downtown	Form Based Zoning	500 - 1,500	Little Rock
Scenario 1	16,000	55,000	2010	14 stops 8 vehicles 10 min peak service	Reduce RT 66 service	Downtown Core EDO Neighborhood	Paid and regulated on-street parking along route	Reduced Permit Fees and Fast track Building Permits	1,500 - 2,500	Tampa
Scenario 2	16,500	57,000	2020	20 stops 10 vehicles 10 min peak service	Discontinue RT 66	Downtown Core EDO Neighborhood UNM	Paid parking along route with neighborhood parking permit programs	Public-Private Development Partnerships	2,500 - 4,500	Memphis
Scenario 3	18,000	59,000	2030	26 stops 10 vehicles 10 min peak service	Discontinue Route 66 & 50 and adjust Rapid Ride service	Downtown Core EDO Neighborhood UNM Airport	Parking structures and parking management districts	Tax Increment Development District	>4,500	Portland

Notes:
* 1/2 mile from stations based on MRCOG approved forecast

C. Albuquerque Travel Market Segmentation

	ROUTES CURRENTLY SERVING THE TRAVEL MARKETS					
	Route 50	**Route 66**	**Rapid Ride**	**Rail Runner**	**UNM South Lot Shuttle**	**Streetcar**
TRAVEL MARKETS						
Internal Commuters*	secondary	secondary	primary	minor	minor	primary
External Commuters**	minor	primary	secondary	primary	minor	secondary
Non Work Trips***	minor	secondary	secondary	secondary	minor	primary
Stadium Event Attendees	minor	minor	minor	minor	secondary	secondary
Students	minor	secondary	secondary	minor	primary	primary
Airport Passengers	primary	minor	minor	minor	minor	primary
Tourists/Convention Center Attendees	minor	minor	secondary	minor	minor	primary

Notes:
*traveling within the proposed streetcar route
**traveling beyond the proposed streetcar route
***includes residents and non-residents