8.0 EVALUATION OF ALTERNATIVES

This Chapter presents the results of the evaluation of the alternatives developed for the North Shore Connector Project. These alternatives include the No-Build Alternative, the TSM Alternative, and the Locally Preferred Alternative (LPA), which is the modified Gateway LRT Alternative as described in Chapter 2. The purpose of the evaluation process is to bring together the salient facts, both qualitative and quantitative, for each of the final alternatives. The benefits, costs and environmental consequences of each alternative are evaluated against the stated goals and objectives for the Project, as set forth in Chapter 1.0, Purpose and Need. The purpose of this evaluation is to facilitate the decision-making process for the Federal Transit Administration, Port Authority of Allegheny County, Southwestern Pennsylvania Commission (SPC), public officials, interested residents, institutions, businesses, and other organizations.

The performance of the three alternatives evaluated to serve the North Shore study area was assessed in terms of the following:

- Accessibility and Mobility
- Economic Development
- Environmental Quality
- Equity and Cost Effectiveness

With respect to accessibility and mobility, the Locally Preferred Alternative is forecast to generate the highest overall transit usage of any of the alternatives, with 115,125 weekday boardings in the study area. This alternative would have the shortest travel time, fewest transfers, and the highest frequency of service between the majority of the destinations in the North Shore and most areas of the Golden Triangle.

The Locally Preferred Alternative would also support economic development opportunities, promote the principles of livable communities, and enhance access to new development.

With respect to environmental impacts, while the No-Build Alternative would have the fewest negative impacts on social, economic and environmental factors, it would also provide the fewest improvements or benefits to these factors. The Locally Preferred Alternative would have the greatest positive overall effect on air quality through the greatest reduction in pollutants of concern. None of the alternatives under consideration are expected to have significant adverse effects on historic and archaeological properties. The Locally Preferred Alternative would not result in long-term impacts to natural resources that could not be addressed through appropriate mitigation measures in design and during construction. The No-Build Alternative would not require property acquisition or displacements, while the Locally Preferred Alternative would require the acquisition or partial acquisition of the former Miller Printing Company buildings owned by the Carnegie Institute.

In terms of equity and cost effectiveness, the Locally Preferred Alternative would have the highest potential to serve the greatest number of people, by increasing Port Authority's total annual ridership to over 98 million. In comparison to the No-Build Alternative, the Locally Preferred

Alternative would have a lower incremental cost per rider ($14.97) than the TSM Alternative ($15.07). The TSM Alternative would have lower capital costs and operating costs than the Locally Preferred Alternative but would also serve fewer people. The Locally Preferred Alternative would provide a greater potential to extend LRT service and the benefits of regional connectivity to the North Side neighborhoods, including areas of minority and/or low-income populations than would the No-Build Alternative or the TSM Alternative.

8.1 Evaluation Methodology

The approach to the evaluation of alternatives developed for the North Shore Connector addresses both local goals and objectives and, where applicable, the FTA criteria prescribed for major transit capital investment projects. The evaluation also includes an assessment of the environmental justice and equity implications of the alternatives.

8.1.1 Project Goals and Objectives

The goals and objectives established for the North Shore Connector during the Major Investment Study (MIS), and refined through the Environmental Impact Statement (EIS) scoping process, were developed in response to the needs identified in the study area. The following are the project goals and objectives identified:

A. Accessibility/Mobility Goal: Improve Transportation Access to and Within the North Shore Connector Study Area

Objectives:

A. Provide accessible and sufficient transit service for events held at the new ballpark, new stadium, Cultural District theaters, and expanded convention center.
B. Provide convenient and readily-identifiable transit connections between the North Shore, Cultural District, Near Strip and other downtown area attractions and hotels.
C. Improve the linkage between North Shore fringe parking lots and the employment centers in the Golden Triangle.
D. Reduce the reliance on the automobile for intra-study area trips.
E. Improve reverse commuting opportunities.
F. Improve intermodal connections within the study area.
G. Provide convenient service from the region to activities within the study area.
H. Provide convenient pedestrian connections between the stations/stops and activities.

B. Development Goal: Support Existing and Proposed Development within the Study Area

Objectives:

A. Expand opportunities for transit-supportive land use development.
B. Expand opportunities to promote the principles of livable communities within the study area.
C. Support growth of recreation, convention and tourism facilities.

C. Environmental Goal: Minimize the Impact on the Socio-Economic and Natural Environments

Objectives:

A. Improve air quality.
B. Minimize aesthetic impacts.
C. Minimize impacts to historical and archaeological resources.
D. Minimize impacts to natural resources.

D. Equity/Effectiveness Goal: Produce a System That is Efficient, Effective, Equitable and Capable of Future Expansion Into Nearby Established Neighborhoods

Objectives:

A. Maximize cost-effectiveness.
B. Maximize future expansion capability.
C. Maximize relationship to adjacent communities.

8.2 Evaluation Against the Goals and Objectives of the Project

This section discusses the results of the evaluation against the measures used to establish the effectiveness of the alternatives in satisfying the local goals and objectives.

8.2.1 Accessibility/Mobility Goal: Improve Transportation Access to and Within the North Shore Connector Study Area

A. Provide Accessible and Sufficient Transit Service for Events Held at the New Ballpark, New Stadium, Cultural District Theaters, and Expanded Convention Center.

The measures used to evaluate how well the alternatives would improve access to and within the study area include forecasted transit ridership (daily and to/from sports events) and forecasted service levels.

1. Daily Service

Forecasted Year 2015 ridership for each of the alternatives in terms of linked transit trips, total study area boardings and boardings on LRT and bus modes in the study area are shown in **Table 8-1**.

No-Build Alternative

Daily transit boardings on routes in the study area are forecasted to be 106,455 in the Year 2015.

Table 8-1
Comparison of Daily Ridership Forecasting Results by Alternative – Year 2015

	No-Build Alternative	TSM Alternative	Locally Preferred Alternative
Total Transit System Linked Trips:			
Total Linked Transit Trips	324,520	325,101	329,955
Difference versus No-Build	---	*+581*	*+5,435*
Total Study Area Transit Boardings :			
Total Boardings	106,455	108,335	115,125
Difference versus No-Build	---	*+1,880*	*+8,669*
Boardings on Port Authority Bus Routes in the Study Area:			
Total Boardings	56,853	61,131	54,580
Difference versus No-Build	---	*4,278*	*-2,273*
Total LRT System Boardings :			
Total Boardings	49,603	47,204	60,545
Difference versus No-Build	---	*-2,398*	*10,942*

Source: AECOM Consulting Transportation Group, August 2001

TSM Alternative

The TSM Alternative would improve the existing bus service through increased service on Route 501, creation of "through-routes" and implementation of a cultural shuttle bus. The bus service improvements are forecasted to add another 1,880 weekday boardings in the study area for a total of 108,335.

Locally Preferred Alternative

The Locally Preferred Alternative would replace the Cultural Shuttle bus route and the expanded service on Route 501 in the TSM Alternative with the direct extension of the LRT system to the North Shore. It is forecasted to generate the highest transit usage of any of the alternatives with 115,125 boardings in the study area, or 8,669 more boardings than the No-Build Alternative.

2. Service to PNC Park and Heinz Field

The measure used to evaluate the alternatives in serving PNC Park and Heinz Field was the number of boardings on transit vehicles to and from the sports venues. **Table 8-2** shows the bus and light rail forecasted boardings for each alternative in serving Pirates, Steelers, and Panthers games.

Table 8-2
Comparison of Forecasted Boardings to/from Pirates, Steelers and Panthers Games Year 2015

	No-Build Alternative	TSM Alternative	Locally Preferred Alternative
Pirates Games:			
Boardings – Bus	3,240	4,040	2,680
Boardings – LRT	N/A	N/A	6,138
Total	3,240	4,040	8,818
Steelers Games :			
Boardings – Bus	6,040	7,400	5,560
Boardings – LRT	N/A	N/A	15,912
Total	6,040	7,400	21,472
Panthers Games:			
Boardings – Bus	1,776	2,176	1,635
Boardings – LRT	N/A	N/A	4,680
Total	1,776	2,176	6,315

Source: DMJM+HARRIS, Inc., August 2001

No-Build Alternative

The No-Build Alternative is forecast to produce 3,240 bus boardings to and from Pirates games, 6,040 bus boardings to and from Steelers games, and 1,776 bus boardings to and from Panthers games.

TSM Alternative

The TSM Alternative is forecast to produce 4,040 bus boardings to and from Pirate games, or an increase of 800 boardings over the No-Build Alternative. For service to and from Steelers games, the TSM Alternative is forecast to produce 7,400 bus boardings, or 1,360 boardings more than the No-Build Alternative. For service to and from Panthers games, the TSM Alternative is forecast to produce 2,176 bus boardings, or 400 more boardings than the No-Build Alternative.

Locally Preferred Alternative

The Locally Preferred Alternative is forecast to produce 2,680 bus boardings and 6,138 LRT boardings to and from Pirate games, for a total of 8,818 boardings or 5,578 more boardings than the No-Build Alternative. For service to and from Steelers games, the Locally Preferred Alternative is forecast to produce 5,560 bus boardings and 15,912 LRT boardings, for a total of 21,472 boardings or 15,432 more boardings than the No-Build Alternative. For service to and from Panthers games, this alternative is forecast to produce 1,635 bus boardings and 4,680 LRT boardings, for a total of 6,315 boardings, or 4,539 more boardings than the No-Build Alternative.

B. Provide Convenient and Readily-Identifiable Transit Connections Within the North Shore, Cultural District, Near Strip and Other Downtown Area Attractions and Hotels.

No-Build Alternative

In the No-Build Alternative, there are a very large number of bus routes; however, their routings can be confusing to out-of-town visitors and local residents who are infrequent users of transit (particularly for those traveling between the Golden Triangle and the North Shore). Although some routes such as the 16A Ohio River Boulevard Route connect most of the major attractions in the study area, the service is oriented primarily towards long-distance travelers. Infrequent service, particularly during off-peak periods, limits the effectiveness of this route for intra-study area travel. Additionally, potential traffic congestion during peak commuter hours and during pre- and post-event periods such as concerts and plays in the Cultural District and sports events in the North Shore limits the attractiveness of the bus mode.

TSM Alternative

The TSM Alternative would add a dedicated shuttle bus to connect the attractions in the study area. Use of special vehicles and/or markings would distinguish the vehicle for other buses operating in the study area. However, like other buses in the study area, the shuttle would still be subject to delays caused by potential traffic congestion during peak commuter hours and during pre- and post-event periods such as concerts and plays in the Cultural District and sports events in the North Shore.

Locally Preferred Alternative

For the Locally Preferred Alternative, rail stations, pedestrian underpasses, and maps and other graphics would be well-designed to be easily understood by all transit users. Under this alternative, a transfer would be required for travel between the Convention Center and the North Shore, but direct service would be available from Station Square and the existing Steel Plaza, Wood Street, and Gateway Stations to the North Shore. The Locally Preferred Alternative would be grade-separated throughout the study area.

C. Improve the Linkage Between North Shore Fringe Parking Lots and the Employment Centers in the Golden Triangle.

No-Build Alternative

Four Port Authority bus routes (16A, 16D, 16U, and 501) pass through the existing fringe parking facilities in the western part of the study area. The No-Build Alternative would not provide any changes in existing bus service.

TSM Alternative

The new shuttle route in the TSM Alternative and increased service on Route 501 would provide additional bus service to these facilities as well as parking located in the eastern part of the study area. Because the buses primarily connect the North Shore to the Gateway Center area and are subject to delays in traffic, their usefulness in connecting fringe parking is somewhat limited.

Locally Preferred Alternative

The Locally Preferred Alternative would provide a direct connection from the North Shore fringe parking facilities for commuters destined to areas served by the Gateway, Wood Street and Steel Plaza Stations. A transfer would be required for destinations at or near the Convention Center.

D. Reduce the Reliance on the Automobile for Intra-Study Area Trips.

No-Build Alternative

Because no changes are proposed in existing transit service for the No-Build Alternative, it would have no effect on reducing the reliance on the automobile for travel within the study area.

TSM Alternative

The TSM Alternative would include a dedicated shuttle bus with a 6-minute peak hour headway to serve intra-study area trip needs.

Locally Preferred Alternative

The Locally Preferred Alternative would include a direct LRT link between the Gateway Center area of the Golden Triangle and the North Shore. It would provide an alternative to automobile travel for intra-study area travel by operating at peak hour headways of 2.4 minutes. It would also provide access to the Convention Center through a transfer.

E. Improve Reverse Commuting Opportunities.

No-Build Alternative

The No-Build Alternative would provide no travel improvement for reverse commuters.

TSM Alternative

The TSM Alternative would increase the opportunity for reverse commuting with improvements provided by new through routes.

Locally Preferred Alternative

The Locally Preferred Alternative would provide reverse commuting opportunities by serving employment centers in the North Shore, as well as providing enhanced access to the South Hills employment center for the residents of the Allegheny West, Manchester and Central North Side communities.

F. Improve Intermodal Connections Within the Study Area.

No-Build Alternative

Improved intermodal connections would be available through the Intermodal Transportation Center (ITC), which is included in the No-Build Alternative and would be constructed by 2015.

TSM Alternative

Improved intermodal connections would be available through the Intermodal Transportation Center (ITC), which is included in the TSM Alternative and would be constructed by 2015.

Locally Preferred Alternative

The Locally Preferred Alternative would improve the interface with the ITC and other proposed parking facilities in the North Shore. The new LRT stations would provide opportunities to connect with local transit buses. The Convention Center Station would have a direct connection to Greyhound and other intercity bus services. This station would be located one block northwest of the Amtrak Station and could facilitate a linkage to intercity rail passenger service.

G. Provide Convenient Service From the Region to Activities Within the Study Area.

No-Build Alternative

Many of Port Authority's bus routes serving Pittsburgh's North Side and other communities located north of the Allegheny and Ohio Rivers provide regional connections to the study area from the points in the northern region of Allegheny County. Additionally, the 500 and 501 Routes provide direct service from the East End to the North Shore. No other improvements to the transit network would be made with the No-Build Alternative.

TSM Alternative

The TSM Alternative would improve regional bus access to the study area with through routes from the east, south and western parts of the region, and more express bus service for events.

Locally Preferred Alternative

The Locally Preferred Alternative would provide access on the existing LRT system from the South Hills and provide the most service from the South Hills area to the North Shore because all trains would travel through the Downtown subway into the North Shore. The Locally Preferred Alternative would also include the through-route bus service improvement and the increase express bus service for events provided in the TSM Alternative.

H. Provide Convenient Pedestrian Connections Between the Stations/Stops and Activities.

No-Build Alternative

The No-Build Alternative would include the improvement of underpasses at Federal Street and Allegheny Avenue that would be completed by the Sports and Exhibition Authority.

TSM Alternative

The TSM Alternative would also include the improvement of underpasses at Federal Street and Allegheny Avenue that would be completed by the Sports and Exhibition Authority.

Locally Preferred Alternative

The Locally Preferred Alternative would include improvements to the pedestrian underpass at Merchant Street in addition to improvements to the underpasses at Federal Street and Allegheny Avenue by the Sports and Exhibition Authority.

8.2.2 Development Goal: Support Existing and Proposed Development Within the Study Area

A. Expand Opportunities for Transit-Supportive Land Use Development.

The City of Pittsburgh has developed numerous plans regarding land use, transportation, neighborhood revitalization and economic development. One of these plans, *The Pittsburgh Downtown Plan - A Blueprint for the 21st Century, 1998*, envisions that light rail and other transit systems will continue to alleviate vehicle congestion and parking shortages, and will give residents and visitors a quick, safe and convenient ride between major destinations. The North Shore project is specifically mentioned in the plan.

Additionally, the plan calls for "compact, mixed use, transit-friendly development that encourages greater regional and system efficiency, and downtown-oriented transit use." The City will require "pre-development consideration of the need to integrate transit access with major new downtown projects and fringe parking; expansion of fringe and satellite park and ride opportunities with convenient and timely transit service into downtown; and rapid transit service from downtown to all suburban corridors and major centers of activity." Overall, the goal is to coordinate transit infrastructure improvements with public and private development activities. The specific recommendations call for a future LRT connection to the North Shore and beyond.

No-Build Alternative

The No-Build Alternative would not provide new opportunities for transit-supportive land use development.

TSM Alternative

The TSM Alternative would not provide new opportunities for transit-supportive land use development.

Locally Preferred Alternative

Under the Locally Preferred Alternative, there would be new opportunities for transit supportive development in the vicinity of the Allegheny and PNC Park Stations.

B. Expand Opportunities to Promote the Principles of Livable Communities Within the Study Area.

The Federal Transit Administration (FTA) describes a livable community as one that is successful in combating sprawl. Transportation, in particular public transit and its relationship to nearby development, is one factor in determining whether or not a community can expect success in becoming livable, as transit promotes transportation choice. The following evaluates the alternatives against the opportunity to promote the principles of livable communities.

No-Build Alternative

The No-Build Alternative has significant transit service, and would thus provide opportunities to promote the principles of livable communities within the study area.

TSM Alternative

Under the TSM Alternative, enhancements to the existing bus service would support livable community initiatives in the study area.

Locally Preferred Alternative

The new transit stations, particularly the PNC Park Station, would provide opportunities for joint development and to interface with adjacent development, as well as provide attractive environments for riders. Additionally, there would be improved bus and rail service provided for residents in existing neighborhoods, as well as people living in any new residential development. The LRT would provide a permanence and a recognition factor that gives a sense of "landmark" in a community. In particular, the Allegheny Station would serve as a gateway into the Allegheny West and Manchester neighborhoods. Permanent transit facilities promote the principles of livable communities.

C. Support Growth of Recreation, Convention and Tourism Facilities.

In addition to PNC Park and Heinz Field, the North Shore Master Plan proposes other development for the North Shore. The Carnegie Science Center would be expanded north towards the ITC. A new outdoor amphitheater would be located just to the east of Heinz Field near the riverfront. The riverfront park system would be expanded and extended further inland. Between the PNC Park and Heinz Field, a mix of retail, office, and residential development (including a new hotel) is proposed. As the area is more intensely developed, surface parking would be replaced by garages. However improved transit access would also be required as it would not be feasible to provide parking or all users of these new developments. Additionally, the new development would generate increased motor vehicle traffic on the study area roadway network and improved transit service would be required to ameliorate a potential increase in congestion.

No-Build Alternative

The No-Build Alternative would not enhance access to new development envisioned in the North Shore Master Plan.

TSM Alternative

The TSM Alternative bus service improvements would provide limited support for new development.

Locally Preferred Alternative

The Locally Preferred Alternative would provide the highest level of transit service to access the new development.

8.2.3 Environmental Goal: Minimize the Impact on the Socio-Economic and Natural Environments

Measures used to evaluate how well the alternatives would minimize the impact on the socio-economic and natural environments cover a wide range of assessment areas within the North Shore Connector study area. **Table 8-3** summarizes the potential environmental impacts for the study alternatives.

A. Improve Air Quality.

No-Build Alternative

The No-Build Alternative would have no impacts on regional or microscale air quality.

TSM Alternative

Implementation of the TSM Alternative would reduce Carbon Monoxide (CO) by 5 kg/day, Hydrocarbons (HC) by 1 kg/day, and Oxides of Nitrogen (NOx) by 0.4 kg/day.

Table 8-3
Summary of Potential Environmental Impacts

Impact Area	No-Build Alternative	TSM Alternative	Locally Preferred Alternative
Population, Economy, and Land Use	None	None	Compatible with area Land Use Plans
Acquisitions / Demolitions	None	None	8 partial land acquisitions; 1 parcel with 2 partial or full building demolitions
Environmental Justice	No transit service improvements	Minor bus service improvements to minority and low-income neighborhoods	New LRT service and improved through bus service to minority and low-income neighborhoods
Visual	None	None	Low
Historic Resources	No sites affected	No sites affected	No effect on 10 historic resources; no adverse effect on 2 historic resources; conditional no adverse effect on 5 historic resources; potential effect on 4 archaeological resources

Table 8-3 (Continued)
Summary of Potential Environmental Impacts

Impact Area	No-Build Alternative	TSM Alternative	Locally Preferred Alternative
Parkland	N/A	None	Temporary construction impacts
Utilities	N/A	None	Low
Air Quality Impacts	None	Low	Low
Noise and Vibration	None	None	None
Endangered Species	None	None	Temporary impacts to fish habitat during construction; potential impacts to federally-listed threatened or endangered mussel species during construction
Water Resource Impacts	None	None	Low
Contamination	None	None	Potential impacts during construction; 5 properties require additional Phase II investigation
Energy (difference in BTU's from No-Build)	N/A	-21.1billion	-29.3 billion

Source: DMJM+HARRIS, Inc. and BRW, Inc., September 2001

Locally Preferred Alternative

The Locally Preferred Alternative would reduce the emissions of CO by 166 kg/day, HC by 39 kg/day, and NOx by 12 kg/day.

B. Minimize Aesthetic Impacts.

No-Build Alternative

The No-Build Alternative would neither improve upon nor detract from the visual quality of the North Shore Study area.

TSM Alternative

The TSM Alternative would neither improve upon nor detract from the visual quality of the North Shore Study area.

Locally Preferred Alternative

The Locally Preferred Alternative would involve an elevated section along Reedsdale Street in the North Shore. The above ground segments would introduce catenary and associated support structures in the North Shore. If the PNC Park Station is incorporated into new development, visual impacts would be minor. The Allegheny Station is being designed as a gateway into the West Allegheny and Manchester neighborhoods. In the Golden Triangle, the only visual impacts would result from new entrances/headhouses for the Gateway Center Station and the Convention Center Station.

C. Minimize Impacts to Historical and Archaeological Resources.

No-Build Alternative

The No-Build Alternative would not impact historical or archaeological resources in the study area.

TSM Alternative

The TSM Alternative would not impact historical or archaeological resources in the study area.

Locally Preferred Alternative

The Locally Preferred Alternative would not require the demolition of any historic structures. No effect would result on 10 historic structures in the study area. No adverse effect would result on 2 historic structures. A conditional no adverse effect (meaning that further consultation with the Pennsylvania State Historic Preservation Officer is required during final design and construction) would result on 5 historic structures. The potential for impacts to archaeological resources would be investigated during subsequent design phases and mitigation measures would be developed once the impacts are more fully known. Future coordination and mitigation for historic or archaeological resources will be conducted in accordance with the draft Programmatic Memorandum of Agreement.

D. Minimize Impacts to Natural Resources.

No-Build Alternative

The No-Build Alternative would have no impact on natural resources.

TSM Alternative

The TSM Alternative would have no impact on natural resources.

Locally Preferred Alternative

The Locally Preferred Alternative would involve a tunnel under the Allegheny River. In order to minimize impacts to natural resources, the tunnel will be constructed using a tunnel boring machine. Construction of the tunnel would have temporary effects on natural resources, primarily in the locations where soil stabilization and the removal of the sheet piling at the riverbanks are required. Minimization efforts will be developed through consultation with local, state and federal

agencies during final design to limit the extent of potential impact. No long-term adverse impacts are anticipated.

8.2.4 Equity/Effectiveness Goal: Produce a System That is Efficient, Effective, Equitable, and Capable of Future Expansion

A. Maximize Cost-Effectiveness.

The FTA latest Cost-Effectiveness (C/E) index has been used to examine the incremental cost per incremental rider for a proposed project seeking New Starts funding. This index, expressed in current year dollars, is based on annualized total capital costs and annual operating costs divided by the forecast change in annual transit ridership, comparing the proposed project build alternatives to the No-Build and TSM alternatives. The index value is used to assess the ability of a project to attract riders at the lowest possible cost. **Table 8-4** shows the C/E index calculation.

One factor in ascertaining the effectiveness of the LRT alternative is the impact on the utility of the Downtown Subway between the Steel Plaza and Gateway Center Stations. Utility is defined herein as the ability of the downtown subway to serve not only its downtown access function but also its ability to serve as an integral part of the regional transportation system. With the No-Build and TSM alternatives, the subway would retain both functions.

Under the Locally Preferred Alternative, the utility of the segment of the Downtown subway would be enhanced because the number of transit users would increase by over 5,000 daily riders. In addition, the Downtown subway would not only continue to fully serve the South Hills, but would also directly connect to the new system extension to the North Shore. It would continue to serve as an effective Downtown distribution system, particularly as Downtown-area development continues to occur on the North Shore.

Table 8-4
Cost-Effectiveness Calculation
(Year 2001$)

	No-Build Alternative	TSM Alternative	Locally Preferred Alternative
Annualized Incremental Capital Cost	$0.00	$0.57 million	$28.38 million
Annual Incremental Operation/Maintenance Cost	$0.00	$3.21 million	$4.81 million
Total Incremental Annual Cost	$0.00	$3.78 million	$33.19 million
Total Annual Ridership	96,703,856	96,954,493	98,920,397
Incremental Cost/Rider (Compared to No-Build)	--	$15.07	$14.97
Incremental Cost/Rider (Compared to TSM)	--	--	$14.96

Source: DMJM+HARRIS/AECOM Consulting Transportation Group, September 2001

No-Build Alternative

There is no C/E index associated with the No-Build Alternative because it does not have any capital costs or ridership changes. The No-Build Alternative is one of the two bases to which all of the other alternatives are compared.

TSM Alternative

The C/E index for the TSM Alternative is $15.07 per new rider compared to the No-Build Alternative. The TSM Alternative is the other base that FTA uses to compare the cost-effectiveness of build alternatives such as the LRT alternatives.

Locally Preferred Alternative

The C/E index for the Locally Preferred Alternative is $14.97 per new rider compared to the No-Build Alternative and $14.96 compared to the TSM Alternative.

B. Maximize Future Extension Capability.

The North Side residents are interested in having the LRT extended into their community. Additionally, Strip District interests desire improved connections between the Convention Center area and the Strip District. Future extensions would be analyzed in subsequent studies.

No-Build Alternative

The No-Build Alternative would not position the LRT system to be extended into the North Side or to the Strip District.

TSM Alternative

The TSM Alternative would not position the LRT system to be extended into the North Side or to the Strip District.

Locally Preferred Alternative

The Locally Preferred Alternative would allow a future North Side extension following a subway alignment north of the PNC Park Station, past the Clark Candy Building on the west side, and traversing below Merchant Street to possible future stations in the North Side and beyond. This future extension could serve the Central North Side neighborhood, and turn west to serve the Manchester and Allegheny West communities or east to serve the East Allegheny neighborhood. The North Side extension could eventually be extended to the North Hills. One possibility would be to convert the I-279 HOV Lane to an LRT facility.

The Locally Preferred Alternative could be extended into the Strip District and further through the Allegheny Valley. If conversion of the East Busway to LRT is desired, an extension through the Strip District could be extended to the East Busway. The line also could be extended west through the Ohio Valley and has the potential of eventually being extended further to the Airport.

C. Maximize Relationship to Adjacent Communities

One of the main themes of the public comments was that the North Shore Connector should enhance access from the adjacent North Side neighborhoods to the North Shore, Golden Triangle and other locations served by Port Authority. Additionally, Strip District interests desire improved connections between the Convention Center area and the Strip District.

Executive Order No. 12898 of February 11, 1994 entitled "*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*" requires that federal agencies consider and address adverse environmental effects of proposed federal projects on minority and low income communities. The order states to the greatest extent practicable by law that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high adverse human health or environmental effects of its programs, policies and activities on minority populations and low income populations

No-Build Alternative

The No-Build Alternative would not improve transportation for North Side residents or improve access to the Strip District.

TSM Alternative

The TSM Alternative would improve bus service for North Side residents with the shuttle bus service, addition of more through routes, and operation of the new East/West Busway through route. Strip District bus service would be enhanced with the 16A/86A through route. The neighborhoods of the North Shore, Allegheny Center, Central North Side and East Allegheny (identified as low income communities in Section 3.2) and Manchester (identified as a low income and predominantly minority neighborhood) would benefit from the improved bus service.

Locally Preferred Alternative

The Locally Preferred Alternative would provide grade-separated light rail service in place of the Cultural Shuttle bus route and the increased service on Route 501 proposed in the TSM Alternative. The Locally Preferred Alternative would have stations within walking distance of the Allegheny West and Manchester neighborhoods. The Convention Center Connection would serve the western edge of the Strip District. The neighborhoods of the North Shore, Allegheny Center (identified as low income communities in Section 3.2), and Manchester (identified as a low income and predominantly minority neighborhood) would benefit from the improved transit service. Additionally, portions of the North Shore, Allegheny Center and Manchester neighborhoods would be within walking distance of new LRT stations. Construction and operation of this alternative would result in no disproportionate negative impacts to minority or low-income people living in the adjacent neighborhoods.

8.3 Conclusion

Table 8-5 presents a summary of the three North Shore Connector alternatives against the goals established for the study.

Table 8-5
Comparison of Alternatives Against Goals

Goals	No-Build	TSM	LPA
Accessibility and Mobility	1. 106,455 daily boardings[1]. 2. No transit service improvement.	1. 108,335 daily boardings[1]. 2. Frequent shuttle bus and through bus routes.	1. 115,125daily boardings[1]. 2. Frequent 2.4-minute peak LRT service (no transfer required between North Shore and Gateway Center).
Economic Development	1. Does not support economic development. 2. Does not support principles of livable communities.	1. Does not support economic development. 2. Supports principles of livable communities.	1. Supports economic development. 2. Supports principles of livable communities.
Environmental Quality	1. No effect on air quality. 2. Improvements to 2 pedestrian underpasses. 3. No property acquisitions.	1. Positive effect on air quality. 2. Improvements to 2 pedestrian underpasses. 3. No property acquisitions.	1. Positive effect on air quality. 2. Improvements to 3 pedestrian underpasses. 3. 1 full and 8 partial property acquisitions.
Equity and Cost-Effectiveness[2]	1. C/E index not applicable. 2. No service improvements. 3. Does not position LRT for future extensions into the North Side, Ohio Valley or Strip District. 4. No service improvements to minority or low-income neighborhoods.	1. $15.07 C/E index. 2. Shuttle bus and through bus routes. 3. Does not position LRT for future extensions into the North Side, Ohio Valley or Strip District. 4. Moderate service improvements to minority and low-income neighborhoods.	1. $14.97 C/E index. 2. LRT and through bus routes. 3. Positions the LRT for future extensions into the North Side, Ohio Valley and Strip District. 4. High level of service improvements to minority and low-income neighborhoods.

Source: DMJM+HARRIS, Inc. and BRW, Inc., September 2001
[1] Includes bus and LRT boardings within the study area
[2] Compared to No-Build Alternative