

The preliminary environmental analysis was applied to a 60-meter (200-foot) study buffer surrounding the proposed centerlines of each alternative alignment, in effect, 30 meters (100 feet) on each side of the centerline. Impacts to critical environmental features were tabulated for those located within this buffer zone. Sources of data included regional information obtained from the SPC geographic information system, historical aerial photography, recent aerial photography (April 2001 and June 2002), U.S. Geological Survey (USGS) quadrangle maps, statewide and national environmental data files, resource inventories from the Pennsylvania Historical and Museum Commission (PHMC), other project files, and field observations. All information was aggregated to allow comparison of alternative alignments within each section.

Technical information on the site-specific project was first presented to the public in a series of open house meetings held throughout the project area. The first round of public meetings was held between October 23, 2001 and November 1, 2001. This initial series of meetings introduced the project to the public, presented project needs, and identified potential areas of community concern. Nearly 300 people attended the meetings.

Similar information was provided to a special inter-agency task force comprised of representatives from environmental resource and transportation agencies with jurisdiction over, or having operating interests in, transportation projects in Pennsylvania. These agencies are shown in Figure 2.6-1.

**2.7 Preliminary Alternatives Dismissed from Further Study**

Although it would have been possible to compare potential alignments for the entire length of the project (from PIA to the Greensburg/Hempfield Township area), only alignments within each section were compared to one another because all three study sections exhibited different characteristics. Section A (PIA to Downtown Pittsburgh) is suburban in nature to the McKees Rocks area, where the corridor transitions to urban neighborhoods. Fast developing commercial hubs, new employment activity centers, and clustered residential neighborhoods are all found within Section A. Section B (Downtown Pittsburgh to the Monroeville/Penn Hills area), on the other hand, is almost completely urban in character (and mostly built-out), with dense residential neighborhoods, the region’s foremost commercial and employment centers, and unique recreational activity areas and tourist attractions of regional importance. Section C (the Monroeville/Penn Hills area to the project’s terminus in Westmoreland County) is both suburban and rural in nature, and includes parts of Westmoreland County’s two fastest growing residential communities (Murrysville and Penn Township), as well as some active farmland.

**Federal Agencies**

- Federal Aviation Administration
- Federal Highway Administration
- Federal Railroad Administration
- Federal Transit Administration
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service

**State Agencies**

- Pennsylvania Department of Agriculture
- Pennsylvania Department of Community and Economic Development
- Pennsylvania Department of Environmental Protection
- Pennsylvania Department of Transportation
- Pennsylvania Fish and Boat Commission
- Pennsylvania Game Commission
- Pennsylvania Historical and Museum Commission
- Pennsylvania Turnpike Commission

**Local Agencies**

- Port Authority of Allegheny County
- Southwestern Pennsylvania Commission
- Westmoreland County Transit Authority

**The Pennsylvania High-speed Maglev Project  
Environmental Resource and Transportation  
Agencies with Jurisdiction over  
Transportation Projects in Pennsylvania  
Figure 2.6-1**

For the proposed alignments to maintain passenger comfort and safety and attain the legislatively targeted level of speed, minimum distances between stops of approximately 19 kilometers (12 miles) would be required. To accomplish this, each grouping of alignments (Sections A, B, and C when viewed together as one unit, not as individual segments) was developed to meet the speed criteria from end to end, but not necessarily within each of the respective project sections. (For example, the urban character of Section B, and the existing dense development found throughout it, impeded the attainment of the speed criteria on any alternative alignment proposed for that particular section.) Figure 2.7-1 shows the preliminary alternative alignments and identifies which of these alignments would achieve the project's targeted speed.

After the data were collected, summaries of preliminary impacts were prepared, analyzed, and presented to the Technical Advisory Committee (TAC) at planning workshops held on November 7, 2001 and February 7, 2002. The TAC is comprised of several federal, state, and local planners; economic development specialists; and, transportation officials who agreed to provide technical input and guidance on the environmental and engineering studies for the project. The complete membership list is shown on Figure 2.7-2. The TAC met on a regular basis throughout the development of the project. Several members of the project's analytical team, including engineers, planners, and environmental specialists, presented information to the TAC at the planning workshops. The purpose of the workshops was to present the engineering and environmental information developed up to that point, and to provide a forum to identify the alternative alignments that should be carried into detailed study. Copies of the workshop agendas, minutes, and handout materials, as well as similar information for all other TAC meetings, are located in the project technical support files (PTSF).

As a result of the findings presented at the planning workshops, the TAC recommended that Alternative Alignments A1, A2, A3, A4, B1, B2, B3, and C3 not be carried forward for further study. Alternative alignments were recommended for dismissal from further study for the following reasons:

- Because they could not meet the speed criteria. If the speed criteria could not be met at some point along the entire maglev alignment, the TAC determined the proposed project would not properly demonstrate maglev technology.
- Because they posed serious engineering difficulty to the eventual construction of a maglev system. Passenger safety, comfort, constructability, minimum/maximum horizontal and vertical grades, ease of construction, system durability, and future operating costs were all factors that required certain engineering standards be met while developing any potential alignment.
- Because of the potential level of unavoidable environmental impacts to construct the alternative alignment. Although there would be some level of environmental impact with the construction of any alternative alignment, comparatively, some alignments were clearly judged better than others because the potential environmental impacts were more reasonable.

A list of the advantages and disadvantages of each preliminary alternative was summarized and presented at the TAC, Interagency Coordination Meetings, and public meetings to determine which alternatives should be advanced for further study. This information is included in the working paper, *Initial Screening of Proposed Maglev Alternatives* included in the PTSF, which provides a more detailed discussion of the preliminary alternative alignments and the process used to screen the proposed alignments. To the extent possible, the proposed alignments and passenger stations were evalu-



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<p>Wesley Blaha President <b>Monroeville Chamber of Commerce</b></p>	<p>Earl Hord Director <b>Allegheny County Department of Economic Development</b></p>	<p>Barbara McNees Support Services Coordinator <b>Pittsburgh Chamber of Commerce</b></p>
<p>James Byers Harrisburg ADO <b>Federal Aviation Administration</b></p>	<p>Bill Hunt President <b>National Association of Offices and Industrial Properties</b></p>	<p>Anthony Mento, P.E. Metropolitan Intermodal Engineer <b>Federal Highway Administration</b></p>
<p>Sharon Daboin Deputy Secretary for Aviation <b>PENNDOT</b></p>	<p>Chuck Imbrogno Models Data Manager <b>Southwestern Pennsylvania Commission</b></p>	<p>Harold Miller <b>Allegheny Conference Pennsylvania Economy League</b></p>
<p>Joseph L. Daversa Director, Bureau of Public Transportation <b>PENNDOT</b></p>	<p>Sidney Kaikai Senior Planner <b>City of Pittsburgh Planning Department</b></p>	<p>Mary Jo Morandini General Manager <b>Beaver County Transit Authority</b></p>
<p>Paul Dick <b>Committee for Accessible Transportation</b></p>	<p>Frank Kempf, P.E. Assistant Chief Engineer <b>Pennsylvania Turnpike Commission</b></p>	<p>Larry Morris Executive Director <b>Westmoreland County Transit Authority</b></p>
<p>Chuck DiPietro Transportation Planning Director <b>Southwestern Pennsylvania Commission</b></p>	<p>Larry King Deputy Secretary for Planning <b>PENNDOT</b></p>	<p>Sam Prasad MPO Manager for Western Pennsylvania <b>PENNDOT</b></p>
<p>Michael Dufalla, P.E. District Executive <b>PENNDOT - District 12</b></p>	<p>George Kronz Assistant Environmental Manager <b>PENNDOT - District 11</b></p>	<p>Patricia Remy Environmental Manager <b>PENNDOT - District 11</b></p>
<p>Kent George, AAE Executive Director <b>Allegheny County Airport Authority</b></p>	<p>Arnold Kupferman Maglev Program Manager <b>Federal Railroad Administration</b></p>	<p>Michael Saunders Northeast Corridor Program Manager <b>Federal Railroad Administration</b></p>
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<p>Sally Haas President <b>Airport Area Chamber of Commerce</b></p>	<p>Gene Lakin Executive Director <b>Westmoreland County Airport Authority</b></p>	<p>Marilyn Skolnick Member <b>Allegheny County Transit Council</b></p>
<p>Raymond Hack, P.E. District Executive <b>PENNDOT - District 11</b></p>	<p>Larry Larese Director <b>Westmoreland County Planning Department</b></p>	
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**The Pennsylvania High-speed Maglev Project**  
**Technical Advisory Committee Membership**  
**Figure 2.7-2**

ated quantitatively. In some instances, the screening criteria could not be quantified with a measured score and qualitative evaluations were substituted. The use of a qualitative evaluation in these cases allowed the identification of issues that could result in the potential for high, medium, or low environmental effects or a yes/no type of ranking. In the high/medium/low system, “high” indicated a high potential to result in a negative effect and “low” indicated a low potential for a negative effect. The use of a similar measurement system was also applied to engineering-related elements, allowing a comparison of design issues between the various alternative alignments.

The preliminary design elements that were considered during the initial screening evaluation were applied to both the proposed alternative alignments and possible passenger stations. The engineering design elements were applied either quantitatively or qualitatively, using the high/medium/low system or a yes/no ranking. When the high/medium/low system was used, comparisons were only made to the other alternatives within the same planning analysis zone (or study section). The definitions of specific design elements differed slightly when applied to either an alternative alignment or a proposed passenger station.

The following is an explanation of the design elements used for the preliminary screening:

**Speed Criteria** – Could a speed of 386 kph (240 mph) be obtained with proper degree of horizontal and vertical curvature, maximum grades, and length of alignment? Attainable speed on any of the proposed alternative alignments would be a function of passenger safety and comfort and was dependent on degree of curvature, maximum grades, and length of alignment. A “yes” response indicated that the speed criteria would be met and a “no” response indicated that it would not be met.

**Alignment Compatibility** – Could the alignment within a specific section connect with a multiple number of alignments in adjoining sections? A “yes” response indicated that there would be more flexibility in connecting to alignments in the adjacent sections. A “no” response indicated that the selection of alignments in adjacent sections would be restricted. Could more than one alignment utilize specific passenger station locations? A “yes” response indicated that there would be more flexibility in the selection of alignments into and out of the station. A “no” response indicated that the selection of the alignment would be restricted.

**Railroads** – Would alignments impact existing rail lines in a linear fashion? “High” indicated that there would be a substantial length of linear track involvement with a railroad. In these areas, the proposed alignment would generally occupy the air space over the tracks and crash walls could be required. The amount of linear involvement with existing rail lines, however, could be a concern where rail rights-of-way were too narrow to accommodate another transportation mode. A “medium” ranking indicated that there would be less linear track involvement or the involvement of a railroad known to be a willing participant in the project. A “low” ranking indicated that there would be no linear track involvement although there could be transverse crossings. None of the existing railroads would be affected by the proposed passenger stations.

**Utilities** – Would major utility relocations or numerous utility involvements be required? “High” indicated that impacts to major utility lines, such as high-tension lines, major gas transmission lines, or a substantial number of impacts to utilities, could occur. “Low” rankings were assigned to proposed alignments that would traverse rural areas or require no major utility relocation. Would utilities be available to support passenger station locations? “High” rankings indicated that there would be major impacts to existing utilities or that the proposed station was located in an area where no utility infrastructure is currently available. A “medium” ranking indicated that there would be a moderate level of

involvement with utilities and that water, sewer, and electric service would be available to the station. “Low” indicated that there would be no involvement with existing utilities.

**Construction Complexity** – Would special construction techniques be required for either the proposed alignments or the passenger stations? A “high” score indicated that special construction techniques would be required. A “medium” score indicated that a few special construction techniques may be required. “Low” indicated that no special construction techniques would be required. Generally, special construction techniques could increase the costs of the proposed project, potentially to an inordinate amount.

**Special Structures** – Would special structures, such as tunnels, crash walls, or major retaining walls, be required for either the proposed alignments or the passenger stations? “Yes” indicated that there would be a need for one or more of these special structures. “No” indicated that there would not. Once again, special structures could increase the costs of the proposed project, potentially to an inordinate amount.

**Infrastructure Improvements** – Would other infrastructure improvements be required at the proposed passenger station locations to handle the projected number of passengers at the stations? “High” indicated that major improvements to the existing roadway network would be required to provide adequate access to the station. “Medium” indicated that some improvements to provide adequate parking at the proposed station or improved access to it would be required. “Low” indicated that few or no improvements to the existing roadway would be required.

**Intermodal Connectivity** – Would improvements be needed to other transportation modes, other than automobile, to access the passenger station locations? A “high” score indicated that major improvements would be required to provide connections with other modes of transportation, such as light rail, bus, or pedestrian access, at the proposed stations. A “medium” score indicated that only some improvements to existing facilities would be required to provide connections with other modes of transportation at the proposed stations. A “low” score indicated that connections with other modes of transportation are already in place at the proposed station locations.

**Ridership** – How many riders are expected at each passenger station location? Preliminary ridership figures were used during the initial screening of alternative alignments. The preliminary ridership figures did not differentiate between alternative stations at a particular location. At this stage of the analysis, it was assumed that each passenger station serving PIA would have the same level of usage, each station serving the Downtown Pittsburgh area would have the same level of usage, each station serving the Monroeville area would have the same level of usage, and each station serving the Greensburg area would also have the same level of usage. New ridership figures that identified specific estimates of usage at each location were not generated until the more detailed analysis phase of the project began.

**Operation and Maintenance Costs** – What special design factors for each of the proposed alternative alignments would result in higher operating or maintenance costs? Operation costs would generally increase as the alignments lengthened. Other factors, such as the need for special structures or the occurrence of steep grades along the alternative alignments, would also cause operation and maintenance costs to increase. “High” rankings indicated that the alignments would have longer lengths, require more special structures, have steeper grades, or a combination of these factors. “Low” rankings indicated that the proposed alignments would be shorter, traverse less steep grades, or would require fewer special structures.

A summary of the Preliminary Alternatives dismissed through the Initial Screening Process is as follows:

### 2.7.1 Section A

**Alternative Alignment A1** – The primary consideration for dismissing this alignment during the initial screening process was “alignment compatibility.” Alternative Alignment A1 would only connect to the North Shore station, and limit alternative alignments in Section B. As discussed in more detail in Section 2.9, after analysis of the downtown stations, the Steel Plaza station was determined to be preferred due to its direct connections to the light rail system, on-street bus service, and the ability for CBD workers and visitors to access the station by foot, and would provide the best opportunity for generating ridership. Therefore, it was a priority to evaluate an alignment with regard to this consideration.

Alternative Alignment A1 would also be the longest of all of the alignments considered in Section A, approximately 6 kilometers to 10 kilometers (4 to 6 miles) longer than the other alignments, requiring one major river crossing (approximately a 381-meter [1,250-foot] structure crossing the Ohio River near the Deshields Dam), and forcing a second major river crossing in Section B. Preliminary engineering estimates have shown that a major river crossing would cost approximately \$50 million. All of the Section A alternatives have at least one major river crossing. This alignment would also have a lengthy impact to the existing rail lines along the north side of the Ohio River. These issues combined to make this a complex and expensive alternative to construct and maintain.

Additionally, Alternative Alignment A1 would have high community impacts, affecting both residential and commercial development. Alternative Alignment A1 would also have high historic resource impacts, impact four major hazardous waste sites, and one park. The potential impacts to Section 4(f) resources (publicly-owned land utilized as a park, recreation area, or wildlife/waterfowl refuge, or a historic site of national, state, or local significance) by this alternative alignment and all other potential alignments was considered a large disadvantage because of the strong review standards associated with Section 4(f) and the protection accorded such resources. Consequently, potential Section 4(f) resources were avoided, as much as possible, during the preliminary analyses throughout the entire project area, regardless of the alternative alignment under study.

**Alternative Alignment A2** – Although not exhibiting as many community impacts as some of the other proposed alignments in Section A, Alternative Alignment A2 could not attain the speed requirement due to the horizontal curve radii required to enter the Montour Run Valley, whereas other reasonable alignments in this section do satisfy the criteria. Therefore, Alternative Alignment A2 would not satisfy all of the project needs. Additionally, Alternative A2 would not be compatible with the Airport’s Master Plan for future development. The proposed alignment would intrude into PIA air space safety areas and require the use of land reserved for future runway improvements. The potential impacts to the airport safety areas and the use of land needed for long-range development at PIA could jeopardize the airport’s operational plans and limit its potential for growth or expansion. This alternative alignment would also have longitudinal impacts to the Montour Trail, a Section 4(f) facility, due to the alignment following the same corridor as the former Montour Railroad. Alternative Alignment A2 would also impact

a cemetery and would have high rail impacts along the southern side of the Ohio River and moderate impacts to community resources.

**Alternative Alignment A3** – Alternative Alignment A3 is identical to Alternative Alignment A5 (see Section 2.8.1.1) with the exception of approximately 305 meters (1,000 feet) in the area near PA Route 60 and the McClarens Interchange. In this area, Alternative Alignment A3 would impact existing and proposed developments associated with a light industrial area and business park. Alternative Alignment A5 shifts the alignment approximately 500 feet to the north avoiding most of the impact to this development. Since these two alignments are virtually the same, and neither impact any Section 4(f) resource in the area of the shift, Alternative Alignment A3 was dismissed from further study.

**Alternative Alignment A4** – Alternative Alignment A4 is similar to Alternative Alignment A5 (see Section 2.8.1.1) from Montour Run into the City of Pittsburgh. From Montour Run to the PIA, Alternative Alignment A4 would approach the PIA from the northeast side and would require a passenger station at Beers School Road. This alternative would be the only proposed alignment to provide service to the Beers School Road station. Based on the station analysis conducted and presented at the station workshops, it was determined that this station was less desirable than other stations serving the airport area. Additionally, this proposed alignment would require tunneling under existing runways to provide access to PIA, which could create safety and security concerns at the airport. This proposed alternative alignment also would not meet the speed criteria due to the horizontal curve radii required from the Montour Run valley to the Beers School Road location; it therefore does not satisfy all of the project needs. Neither Alternative Alignment A4 nor Alternative Alignment A5 impact any Section 4(f) resources from Montour Run to PIA. For these reasons, Alternative Alignment A4 was dismissed from further study.

## 2.7.2 Section B

**Alternative Alignment B1** – This alternative alignment is approximately 35.4 km (22 miles) long. This alternative would utilize the North Shore station, limiting alignment compatibility to only Alternative Alignment A1. To utilize the Steel Plaza station, this alternative would require the need for two new major river crossings, the first as it leaves the Steel Plaza station and crosses the Strip District and the Allegheny River on a major structure and the second when it crosses back over the Allegheny River near Verona. Preliminary engineering estimates have shown that each additional river crossing would increase the overall cost of the project by at least \$50 million and potentially create additional environmental impacts. The incompatibility of the Section A and B connections to the Steel Plaza station and the additional cost and construction complexity of two new major river crossings were a primary consideration for dismissing this alternative.

This alignment would also have high impacts to the residential communities along the northern shore of the Allegheny River (Sharpsburg, Millvale, Etna, and O'Hara Township), community facilities, historic resources, and the existing rail corridor along the north side of the Allegheny River. These impacts were a result of the tight physical constraints within this corridor: two active railroads, the Allegheny River, and dense residential and commercial developments. These were the reasons for dismissing Alternative Alignment B1.

**Alternative Alignment B2** – This alignment would follow the East Busway and Norfolk Southern Railroad, thereby potentially making use of an existing transportation corridor through the heavily developed east end neighborhoods of the City of Pittsburgh. However, because of the tight physical constraints occurring within this alignment, it would be difficult to build in several areas without impacting the adjacent residential and commercial development or impact busway or rail operations. Following the East Busway would result in a restrictive alignment within an urban setting, requiring numerous special structures, complex construction, and high impacts to the surrounding residential communities. It would also impact a cemetery. Alternative Alignment B2 would result in the lowest operating speed of all of the alignments considered in Section B. Due to the curve radii and elevation variations in this alignment, the speed for this alignment would be no more than 64 kph (40 mph) for more than two-thirds of the distance from the Pittsburgh CBD to Monroeville. This would result in a trip time of approximately 24.5 minutes, over twice that of the other alternatives. This alternative alignment would not meet the project’s purpose or need due to the extremely low operating speed. These were the reasons for dismissing Alternative Alignment B2.

**Alternative Alignment B3** – This alignment is only compatible with the Station Square passenger station and would not be able to provide service directly into the CBD of Pittsburgh. As discussed in Section 2.9, after analysis and discussions at the station workshops, the Steel Plaza station was determined to be the preferred station serving Downtown Pittsburgh. Alternative Alignment B3 would also have high impacts to historic structures located in Pittsburgh’s South Side neighborhood and historic sites located along the southern side of the Monongahela River. This alignment would also impact unique developments such as Sandcastle (a major regional waterpark), the Waterfront (a mixed use redevelopment project), a cancer institute, and a proposed fuel cell research and manufacturing facility. There would be no advantages to this alignment, as evaluated by the initial screening criteria, to compensate for these difficulties and it was not considered for further evaluation. These were the reasons for dismissing Alternative Alignment B3.

### 2.7.3 Section C

**Alternative Alignment C3** – This alignment follows the existing transportation corridors of the Pennsylvania Turnpike and U.S. Route 30. Because of the horizontal curve radii at each end and the short tangent distance between the two curves, this alternative alignment would not be able to meet the speed criteria, whereas other reasonable alignments in this section do satisfy the criteria. Therefore, Alternative Alignment C3 does not satisfy all of the project needs. This alternative alignment would have considerable construction complexity due to the close proximity and parallel alignment of the Pennsylvania Turnpike. The alignment would also cross the Pennsylvania Turnpike on a new structure. The alignment would impact the Franklin Township Municipal Sanitary Authority sewage treatment plant and Valley Landfill, an active municipal landfill serving several communities. County planners reported that the facility handles approximately 80 percent of the solid waste generated within Westmoreland County. It would also have high impacts to commercial areas located along U.S. Route 30, particularly within the community of Jeanette and in the rapidly developing area near Toll Route 66. These were the reasons for dismissing Alternative Alignment C3.