The primary function of the Level I Screening was to expose any "Fatally Flawed" alternatives that were identified during early stages of the North South Transportation Initiative. A "Fatal Flaw" would conclude that further investigation of an alternative was not warranted. The alternatives identified and evaluated during Level I Screening included:

- No Build
- Lane Continuity
- Additional Lanes
- HOV / HOT Lanes
- Truck Lanes
- Lane Restrictions
- Decks
- Tunnel
- Freeway-To-Freeway Interchanges
- Transportation System Management (TSM)
- Transportation Demand Management (TDM)
- Fixed-Guideway Rail Transit
- Freight Rail Improvements
- Intelligent Transportation Systems (ITS)

Each of the above alternatives was evaluated using the following criteria:

**Effectiveness**: Does the alternative address the Initiative’s Goals and Objectives and adequately resolve issues in the Needs Assessment?

**Financial Feasibility**: Is sufficient funding available, or likely to be available, to support the alternative, and does the alternative provide a reasonable benefit-cost ratio?

**General Acceptability**: Is there sufficient stakeholder support for the alternative based on its effectiveness to solve the transportation issues within acceptable costs and impacts to the natural and human environments.

Alternatives were identified as Acceptable, Neutral or Unacceptable for each evaluation criteria. If an alternative was determined to be unacceptable, in any one of the three criteria, the recommendation was not to advance it to the more detailed Level II Screening process. The information compiled for each alternative, including a description and recommendation, is summarized in the Level I Screening sheets located in Appendix B.

The Level I Screening analysis addressed broad categories of alternatives and was not intended to address site-specific issues. For example the Freeway to Freeway Interchange Improvement alternative was recommended to advance to Level II. Individual interchanges along the freeway, however, were not evaluated until Level II and Level III Screening.

During the Level I Screening of transportation alternatives it was determined that both Bus Transit and Fixed Guideway Rail Transit contained no “Fatal Flaws” and should be advanced for further analysis. However, because these alternatives were very broad, additional screening was required to identify the types of transit services and alignments that should be studied in greater detail in the Level II Screening. This additional step is referred to as the Level I Transit Screening.

In order to simplify the Level I Transit Screening process, the transit services and alignments were divided into four categories:

- Intracity Express Bus
- Intracity Fixed Guideway Rail
- Intercity Express Bus
Intercity Fixed Guideway Rail

*Intracity transit services* typically link communities within one city or between adjacent cities. They tend to serve a smaller area than intercity type services, stop more frequently, travel shorter distances between stops, and the vehicles often operate at slower overall speeds.

*Intercity transit services* typically link different cities. They often have less frequent stops, with greater distances between stops, perhaps one to three stops per city, and typically the vehicles operate at higher overall speeds.

Express Bus services typically utilize standard 40-foot long transit coaches for service, and bus routes primarily use existing highways and roads to access urban areas. The following local transit authorities currently provide Intracity Express Bus services: Transit Authority of Northern Kentucky (TANK), Southwest Ohio Regional Transit Authority (SORTA), Butler County Regional Transit Authority (BCRTA), Middletown Transit and the Greater Dayton Regional Transit Authority (GDRTA). In general, they provide bus service from community to community with frequent stops throughout their respective regions. Because this type of service is currently provided and monitored by local transit agencies, it was determined that their efforts should not be duplicated during this Study. Therefore, Intracity Express Bus alignments were not identified or studied. Appendix C contains service, fare, schedule, funding and revenue information for each transit authority.

Although the local transit authorities do offer some Intercity Express Bus routes, several alternatives were identified through the Level I Transit Screening process. These alternatives were intended to improve access and mobility throughout the corridor by providing a transit link between the cities within the corridor.

Fixed Guideway or Rail service utilizes rail technology to guide transit vehicles along a beam or track, either in an exclusive right-of-way free from other traffic, or in shared right-of-way where transit mixes with automobile and truck traffic. The most popular types of Intracity rail service are light rail and streetcar, and the most common type of Intercity rail service is commuter train, which often shares infrastructure with freight service.

The Intracity and Intercity Fixed Guideway rail alternatives identified through the Level I Transit Screening were targeted to link, and provide connecting service to and within, the following Cities:

- Florence
- Newport
- Covington
- Cincinnati
- Hamilton
- Hamilton
- Hamilton
- Middletown
- Springboro
- Dayton
- Piqua
- Troy
- Tipp City
- Piqua

The proposed alternatives were also designed to serve traditional as well as non-traditional travel markets and needs such as:

- Suburb-to-Central Business District (CBD)
- City-to-city
- Cross-town (suburb-to-suburb)
- Reverse commute (CBD-to-suburb)

The areas and markets targeted, for both Bus and Fixed Guideway Rail Transit, correspond to the geographic boundaries of the study area and the problems and issues outlined in the Initiative’s Goals and Objectives and Needs Assessment. Concerns articulated by stakeholders throughout the study area during various public involvement events and activities were also incorporated.

The alignments were developed to serve and connect areas of higher densities of population and employment as indicated by the 1990 census and the OKI/MVRPC 2030 projections, throughout the study area. Additionally, the alignments seek to serve the central city areas.
of Cincinnati and Dayton, areas with a large percentage of households without access to cars.

The alignments also serve to link various other rail alignments from similar studies such as the Central Area Loop Study, I-71 Corridor Study, Eastern Corridor Study, Cleveland-Columbus-Cincinnati and Dayton (3C+D) high speed rail project, and the Midwest Regional Rail Initiative (MWRRI) and the Regional Rail System Plan which defined corridors for western Hamilton County and the southeast corridor to Northern Kentucky University. The concept of developing a multi-modal network was a major factor in the development of the alternatives.

Evaluation sheets were developed and completed for each alignment during the initial stages of the Level 1 Transit Screening analysis. This first level of analysis applied qualitative data to a limited number of evaluation criteria. The criteria for Level I Transit Screening included:

<table>
<thead>
<tr>
<th>Effectiveness</th>
<th>To what extent does an alternative meet the Initiative’s stated Goals and Objectives and address the issues outlined in the Needs Assessment? Will the alternative attract sufficient ridership and connect key origins and destinations?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Feasibility</td>
<td>Does there appear to be reasonable capital costs associated with an alternative by comparison? Is there reasonable right-of-way available and are the topographic features conducive to transit implementation?</td>
</tr>
<tr>
<td>General Acceptability</td>
<td>Is the alternative acceptable to most stakeholders, including the Transit Workgroup and other political representatives?</td>
</tr>
</tbody>
</table>

The analysis began with the development of possible alignments, which focused on existing right-of-way including streets, bridges, tunnels, railroad lines, etc. Utilizing existing right-of-way would minimize environmental impacts, community disruption, and costs associated with the acquisition of new right-of-way. A field inspection of each alignment was conducted and both qualitative and quantitative characteristics were documented. Documentation included:

- Street/Roadway Name
- Termini Points (From – To)
- Directional Running (One Way, Two Way, North/South, East/West)
- Number Of Lanes
- Adjacent Development
- Functional Classification (Minor/Major Arterial, Collector, Distributor, Interstate, Etc.)
- Profile (Open Or Closed Section)
- Posted Speed
- Comments

**Intercity Bus Alternatives**

The proposed Intercity Express Bus alignments were based on planned additions and changes to the local transit agencies existing services and routes, as outlined in their strategic/transportation improvement plans.

The express bus alternatives primarily provide service between Dayton, Cincinnati, Springboro, Middletown, Hamilton, Troy and Piqua. Reverse commute options and connections to the Cincinnati/Northern Kentucky and the Dayton International Airports were also considered. The proposed city-to-city connections would primarily use combinations of I-75, I-275, SR 4, SR 122 and the Michael A. Fox Highway (SR 129). Figure 4-1 illustrates the alignment segments that were evaluated. Segments outlined in green were recommended to advance to Level II Screening.
Figure 4-1: Level I Screening
Intercity Express Bus Alternatives
**Intercity Rail Alternatives**

The Intercity Rail alternatives evaluated during the Level I Transit Screening focused on both commuter and freight rail to optimize transportation systems throughout the OKI and MVRPC region. The alternatives primarily looked at existing freight lines in terms of capacity, utilization and track conditions within the corridors previously mentioned. Figure 4-2, on the following page, contains a summary of the alignments evaluated; complete evaluation sheets for each alternative can be found in Appendix C. Freight rail alternatives were not subjected to the traditional Level I Screening process because they are privately held. A discussion regarding the movement of freight can be found in Chapter 7 of this report.
Figure 4-2: Level I Screening
InterCity Rail Alternatives
Intracity Rail Alternatives

The following discussions summarize the Intracity Rail Alternatives for the OKI and MVRPC region by county. Evaluation sheets can be found in Appendix C.

Boone, Kenton and Campbell County, Kentucky Alternatives

Intracity fixed-guideway rail alternatives were not identified in the Northern Kentucky area. The Initiative acknowledges the work of other studies affecting Northern Kentucky and has incorporated alternatives into the recommendations. The I-71 Corridor Study and the Central Area Loop Study independently addressed the need to accommodate local travel within the area using fixed-guideway transit. Their alternatives are embraced by the Initiative and no further study or duplication of effort was performed.

Hamilton County Alternatives

Several factors influenced the development of the fixed-guideway rail alignments for the Initiative in the Greater Cincinnati region. First, all alignments/options were developed with a “systems plan” concept in mind, linking alignments from other studies as well as bus service. Secondly, the Initiative sought to maximize the use of existing right-of-way such as surface streets, interstate rights-of-way, the existing Central Parkway tunnels, and other opportunities. Another concept was to use the Cincinnati Union Terminal and/or the Second Street Transit Center as multimodal stations, accommodating both intercity and intracity services.

After screening out some of the alternative segments, as shown in Appendix C, the following options remain to accommodate potential intracity rail line service, emanating from Cincinnati’s CBD as shown in Figure 4-3 and Figure 4-4:

- Eggleston Avenue/Central Parkway
- Reading Road/State Route 4
- Calhoun/Clifton to US 127
- Third Street/Gest Street/Western Avenue
- Central Avenue
- I-75 Right-of-Way (Cincinnati to Dayton)
- I-275 Right-of-Way
- Oasis Line

**Eggleston Avenue/Central Parkway**

This alignment would follow a route either in the existing Central Parkway tunnels or on the surface of Central Parkway. The alignment would connect to the Central Area Loop Study alignment at Pete Rose Way; continue north on Eggleston Avenue and west on Central Parkway. From Central Parkway, the alignment could proceed west on Ezzard Charles to the Cincinnati Union Terminal or continue north on Central Parkway. This alignment would utilize the terminal as a potential multimodal hub.

**Reading Road / Route 4**

From the I-71 alignment, this option would continue north along Reading Road until the intersection with Paddock Road (SR 4) near Avondale. At this point, the alignment would then travel northward along Paddock Road (SR 4) until reaching a point just north of I-275. An option also exists to extend this alignment from the I-275 area northward to the City of Hamilton. This alignment would provide connections from the Cincinnati CBD to Corryville and Avondale.

**Calhoun/Clifton to US 127**

Similar to the above alignment, this proposed alignment would tie into the proposed I-71 Corridor at Calhoun Street. From this point, it would proceed west on Calhoun Street turn north on Clifton Avenue and west on Ludlow Avenue and then north on Hamilton Avenue (127), to an area just north of I-275 probably near Kemper Road. An option also exists to extend the alignment further north to the City of Hamilton. This alignment would connect the
Cincinnati CBD with Clifton Heights, Clifton, Northside, College Hill, North College Hill, Mt. Healthy and Forest Park.

**Third Street/Gest Street/Western Avenue**
This alignment would use Gest Street in combination with the I-71 and Central Area Loop Study project alignments and connect to the Cincinnati Union Terminal. Gest Street is a lower volume surface street to the west of the CBD area and would provide a direct connection from the Cincinnati/Northern Kentucky CBD’s to Union Terminal. The route would connect to the Central Area Loop route on Third Street near the Brent Spence Bridge and continue north to the Union Terminal. The Gest Street option would provide a direct route to and from the Terminal and would provide an opportunity to further develop or redevelop the industrialized area along Gest Street.

**Central Avenue**
This alignment would potentially use Central Avenue in combination with the Central Area Loop Study alignments and connect to the Cincinnati Union Terminal. Using the two-way segment of Central Avenue, south of Sixth Street, would provide service to the Cincinnati Convention Center. The route would connect to the Central Area Loop route at Third and Central near the Brent Spence Bridge and continue north along Central Avenue and then west or east along Ezzard Charles to the Terminal or to Central Parkway respectfully.

**I-75 Right-of-Way (Cincinnati to Dayton)**
Portions of the I-75 alignment may be utilized for intracity rail from the Cincinnati area northward perhaps all the way to Dayton and possibly beyond (Troy/Piqua). An alignment within the I-75 right-of-way is being recommended to advance to Level 2 Screening. The alignment would be in the I-75 right-of-way median or adjacent to the shoulder and would be in an exclusive right-of-way or guideway either at grade, on an aerial structure, or some combination. This would allow for maximum travel speeds to be attained between stations, thus minimizing travel times. Some combination of other alignments and the partial use of I-75 right-of-way are also likely.

**I-275 Right-of-Way**
Portions of the I-275 alignment may be utilized for intracity rail from the Cincinnati area to connect to other alignments. The use of the wide highway right-of-way would facilitate cross-town east-west/west-east travel in the area. The development and concentration of jobs and other destinations would boost patronage. The alignment would help connect to the proposed I-71 LRT line to the east and to proposed alignments for the I-75 corridor including Route 4 and US 127.

**Oasis Line**
From a spur of the I-71 alignment near Norwood, the proposed alignment would continue north westerly along a portion of the Oasis Line right-of-way northward through Golf Manor and Reading. From the Oasis Line near US 42 at Reading, the alignment could extend further north in the I-75 right-of-way, along SR 4, or continue in the Oasis Line right-of-way. This Corridor is currently underutilized for freight rail and SORTA owns a portion of the Oasis Line right-of-way. In order to facilitate its use as an intracity alignment, temporal or physical separation of the freight and transit traffic may be needed. This would be a topic for analysis in Level II Screening.
Figure 4-3 Level I Screening Intracity Alternatives in Hamilton County.
Butler / Warren County Alternatives

Intracity rail alignments/extending from Cincinnati to Hamilton, Middletown and Springboro are not recommended to advance to Level II Screening. Level I evaluations determined that alternatives connecting Hamilton, Middletown and Springboro to Cincinnati had excessive travel times, minimal ridership potential, and lack of adjacent transit supportive development, due to scattered development patterns and vast rural areas. The intracity rail alternatives running from Cincinnati northward were terminated near I-275, a distance of approximately 12 to 15 miles from the Cincinnati CBD. The OKI 2030 plan illustrates rail connections to the City of Hamilton. Consistent with this expressed objective, Intercity Rail Alternatives are being studied, which are thought to be better suited to provide that type of remote connection. See Figure 4-5 for the Butler County intracity alternatives, and Figure 4-6 for the Warren County intracity alternatives.
Figure 4-5: Level I Screening
Intracity Alternatives in Butler County
Figure 4-6: Level I Screening
Intracity Alternatives in Warren County

<table>
<thead>
<tr>
<th>RAIL</th>
<th>PARK &amp; RIDE STATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXISTING RAIL</td>
<td></td>
</tr>
<tr>
<td>- P.I.R.T. STUDY FUTURE PHASE</td>
<td></td>
</tr>
<tr>
<td>INTRACITY CONCEPTUAL RAIL (ADVANCE TO LEVEL 2 SCREENING)</td>
<td></td>
</tr>
<tr>
<td>INTERCITY CONCEPTUAL RAIL (DO NOT ADVANCE TO LEVEL 2 SCREENING)</td>
<td></td>
</tr>
<tr>
<td>INTERCITY CONCEPTUAL RAIL (ADVANCE TO LEVEL 2 SCREENING)</td>
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</tbody>
</table>
Miami County Alternatives

Several factors influenced the development of the fixed-guideway rail alignments for the Initiative in the MVRPC region. All alignments were developed with a “systems plan” concept in mind, linking other alignments from other studies as well as bus service. Secondly, the Initiative sought to maximize the use of existing right-of-way by utilizing surface street alignments and interstate right-of-way. In addition, multimodal station locations were studied in the effort to facilitate an interdependent transportation system.

In Miami County, an alignment for intracity type services is being considered along I-75 to connect Dayton, Tipp city, Troy and Piqua. This is due, in part, to the predictable development pattern along the interstate, within an otherwise mostly rural county. Another reason the I-75 corridor is being considered is the potential existing right-of-way, which could be utilized for intracity transit type services. See Figure 4-7 for the Miami County intracity alternatives.

**Tipp City, Troy and Piqua Central Business Districts**

No additional intracity rail alternatives operating within Tipp City, Troy or Piqua were recommended to advance to Level II Screening. It has been determined that the population to support ridership is lacking and would not support the incremental costs of advancing an intracity rail alternative to provide service within these areas. However, an alignment along I-75 connecting these cities to each other and to the City of Dayton will be evaluated in comparison to adding lanes to the highway.
Figure 4-7: Level I Screening Intracity Alternatives in Miami County
Montgomery County Alternatives

After screening out some of the alternative segments, as shown in Appendix C, the following options remain to accommodate potential intracity service, emanating from Dayton’s CBD as shown in Figure 4-8 and Figure 4-9:

State Route 741 to South Dixie Highway/Kettering Blvd. to S. Patterson Blvd.
North Dixie Drive
Dayton Central Business District
Tipp City, Troy and Piqua Central Business Districts

SR 741 to South Dixie Hwy/Kettering Blvd. to S. Patterson Blvd.
Beginning at SR 73 in Springboro, this alignment would continue north on SR 741 serving Springboro, the South Dayton Airport and the Dayton Mall area. It then continues north on SR 741 through the heavy retail area at Alexanderville Bellbrook Pike and then turns northeast on South Dixie Highway near the General Motors Plant, then continuing along South Patterson Boulevard into the CBD of Dayton.

North Dixie Drive
From the downtown Dayton area, the North Dixie Drive alignment would originate from Keowee Street or an I-75 alignment and proceed north along North Dixie Drive parallel to I-75 through the moderately dense retail/commercial area between Wagner Ford Road and Needmore Road. This alignment could continue either north on North Dixie Drive or west along I-70 to service the Dayton International Airport.

Dayton Central Business District
In the Downtown Dayton area, there are a handful of alternatives that are recommended to advance to Level II Screening. This area presents numerous challenges to the development of intracity rail. Topography and the nature of a built-up urban environment limited the number of feasible alignments going from the Dayton Central Business District that were suitable from a right-of-way and location perspective. However, viable combinations have emerged from the process and will be evaluated in greater detail. These alternatives are conducive to feeder bus service in addition to any fixed-guideway rail service.
Figure 4-8: Level I Screening
IntraCity Alternatives in Montgomery County
Figure 4-9: Level I Screening
Intracity Alternatives in Downtown Dayton