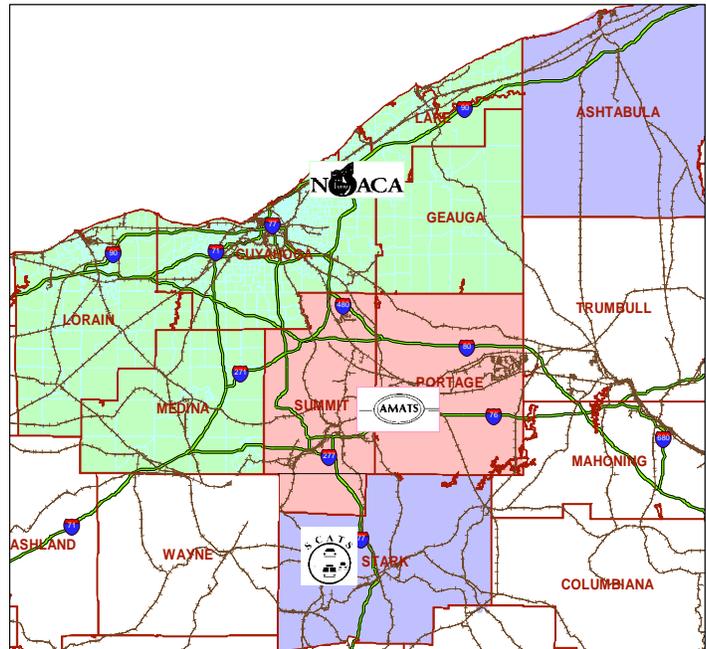


## EXECUTIVE SUMMARY

### Introduction

The Northeast Ohio Commuter Rail Feasibility Study (NEORail) was a two phase study conducted to assess the potential for regional commuter rail service in Northeast Ohio. The study focused on nine counties in the jurisdictions of three metropolitan planning organizations (NOACA, for the Cleveland-Lorain area; AMATS, for the Akron-Kent area, and SCATS, for the Canton-Massillon area). NOACA oversaw the study through its Commuter Rail Advisory Committee (CRAC). Parsons Brinckerhoff, a transportation consulting firm, performed the technical analysis, supported by Urban Conservation and Design, which conducted the public involvement portion of the study.

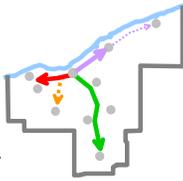
### NEORail II Study Area



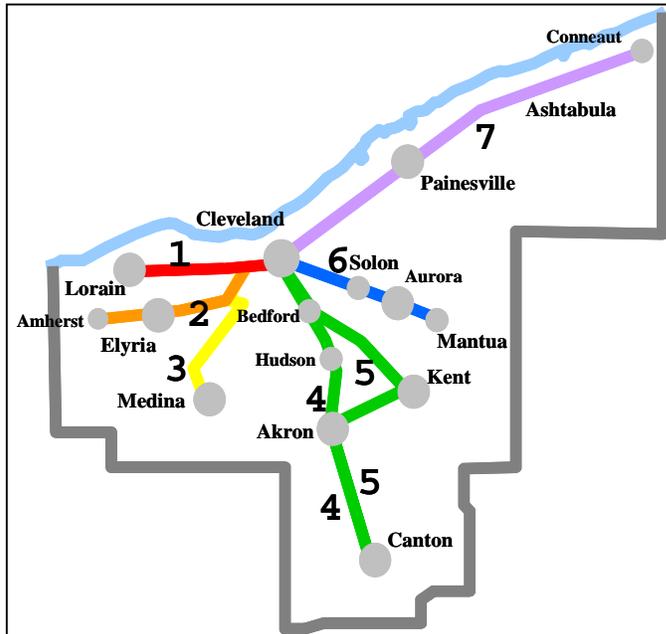
### Phase I

The first phase of the study, which began in November 1997, identified ten potential commuter rail corridors based on an analysis of 39 rail alignments. The study evaluated these ten corridors in terms of ridership potential, cost-effectiveness, impacts on freight service and other factors. The analysis showed that commuter rail service was potentially feasible in seven of the ten corridors. These seven corridors are:

1. Lake West Corridor: Cleveland–Lorain
2. West Corridor: Cleveland–Elyria–Amherst
3. Southwest Corridor: Cleveland–Medina
4. South Corridor: Canton–Akron–Cleveland via Hudson
5. South Corridor: Canton–Akron–Cleveland via Kent
6. East Corridor: Cleveland–Solon–Aurora–Mantua
7. Lake East Corridor: Cleveland–Painesville–Ashtabula–Conneaut



## Potential Commuter Rail Routes



## Phase II

The second phase of the study refined cost/benefit estimates and developed more detailed operating plans, a phasing schedule and options for implementing, governing, and operating commuter rail in Northeastern Ohio.

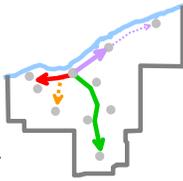
The CRAC developed a set of goals and objectives to guide the study and structure the decision-making process. These goals included identifying feasible rail corridors, supporting the regional transportation plans of the three MPOs, and providing information necessary for decision-makers to assess the feasibility and potential benefits of commuter rail. The goals closely parallel NOACA's goals for the region and the goals of the three MPOs to promote efficiency and effectiveness in transportation infrastructure development.

The study was closely coordinated with the Canton-Akron-Cleveland Major Investment Study (CAC MIS), which was analyzing commuter rail as an option for serving travel needs in the travel corridor connecting those three cities. The study was also coordinated with other regional transportation studies.

The technical products of the study and the results of the public and stakeholder involvement process were considered by the members of the CRAC, which made recommendations regarding implementation and further study. These recommendations will be considered by the MPO governing bodies, which will determine whether to take further steps toward development of commuter rail.

The NEORail study found that regional commuter rail service in Northeastern Ohio is potentially feasible and could provide both local and regional benefits. Commuter rail would support the downtown area of Cleveland and Akron, two of the region's primary employment locations, and would provide an anchor for potential redevelopment of other older developed areas. Commuter rail might also focus land development around stations, slowing urban sprawl; and would provide an example of inter-regional cooperation. Decision-makers must now consider whether the potential benefits of the system outweigh the financial costs and decide whether to take the next steps toward implementation.

If commuter rail is to be developed in the northeastern Ohio region, the next steps toward development rail might include an alternatives analysis (AA) or major Investment Study (MIS) in one or more of the NEORail routes to achieve eligibility for federal New Starts funding. Further analysis and refining of the governance and funding options will be required. Further dialogue



with the freight railroads that own the rail rights-of-way also will be required to facilitate potential implementation. The outcome of other regional transportation and land use planning studies and initiatives will also have bearing on the development of commuter rail.

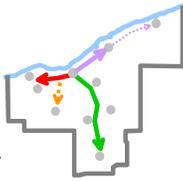
### Regional Trends and Transportation Patterns

Analysis of regional projections indicate that population and employment in the region is not expected to grow significantly over the next 25 years, but rather will disperse further from Cleveland and the other central cities in the study area. Downtown Cleveland, the primary focus of the NEORail network, will remain the region's main employment center, but it is projected to decline in relative terms, with most new jobs being distributed in many smaller suburban locations.

The NEORail study analyzed the travel markets in the five major regional transit corridors served by the seven rail corridors. Analysis indicated that about 60% of the approximately 110,000 persons who are expected to commute to downtown Cleveland in 2025 could be served by one of the seven NEORail corridors. Many of those not served would live in neighborhoods too near to downtown to be served effectively by commuter rail.



If these projections prove to be correct, it will be increasingly difficult for commuter rail—or any form of public transportation—to serve the area. However, these predictions are based on past regional trends. The development of the commuter rail network, if supported by changes to land use planning and zoning, could tend to concentrate development in the central cities served by the system and around station areas in the suburbs, helping to support the goals of the regional transportation plans.



## **Mixing Passenger and Rail Freight Traffic**

The NEORail study area is served by three mainline railroads: Norfolk Southern (NS), CSX Transportation and the Wheeling & Lake Erie Railroad. Every one of the seven potential NEORail routes include at least some track used by one of these three railroads.

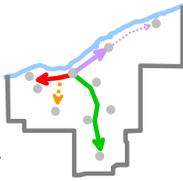
The Conrail breakup and the distribution of its assets to NS and CSX has made the Cleveland area a focal point for east-west traffic for both railroads, serving volumes of over 50 trains per day on some routes. The Conrail breakup also resulted in major shifts in the volume of freight traffic between some of the lines. Some segments are seeing many more trains per day (such as the NS Chicago Line through Berea and the NS Cleveland Line between Bedford and Hudson) while other segments are seeing many fewer trains (such as the former Nickel Plate Line through Lakewood and Lorain). Both CSX and NS project future increases in freight traffic in the Cleveland area, although traffic patterns are still evolving two years after the Conrail breakup.

Introducing commuter rail service onto existing mainline freight tracks would have significant impacts on rail freight operations, particularly at numerous bottleneck locations throughout the region. Thus, it is unlikely that the freight railroads that control key segments of each of the seven routes would permit commuter rail operation on their rights of way without significant capital investment to address bottlenecks in the rail system.

## **Analyzing Commuter Rail Operations**

The NEORail Study estimated costs and ridership at three levels of regional rail service on each of the seven potential rail lines. These levels ranged from a basic service—a few trips per day, during peak travel periods and only in the peak (Cleveland-oriented) direction—to a higher level of service with trains operating at approximately 30-minute intervals during the peak periods, and including significant reverse-commute and mid-day service. Estimates of the number of trainsets (assumed to be an engine plus three coaches) that would be required to operate these levels of service, as well as capital and operating costs and ridership levels, were developed for each of these service levels for each route as part of the analysis.

The higher levels of service would be more attractive to passengers, resulting in higher ridership allowing for more efficient use of the passenger rail system. However, the higher levels of service also would entail higher capital and operating costs: capital costs for infrastructure such as additional track, passing sidings and bridge structures, and operating costs associated with a higher number of trainsets in service.



## Downtown Cleveland

The study assumed that the system's hub in downtown Cleveland would be the proposed North Coast Transportation Center, located below the Mall at Cleveland's lakefront between West 3<sup>rd</sup> and East 9<sup>th</sup> Streets. This site was originally identified in the Intermodal Hub Study, which evaluated alternative sites



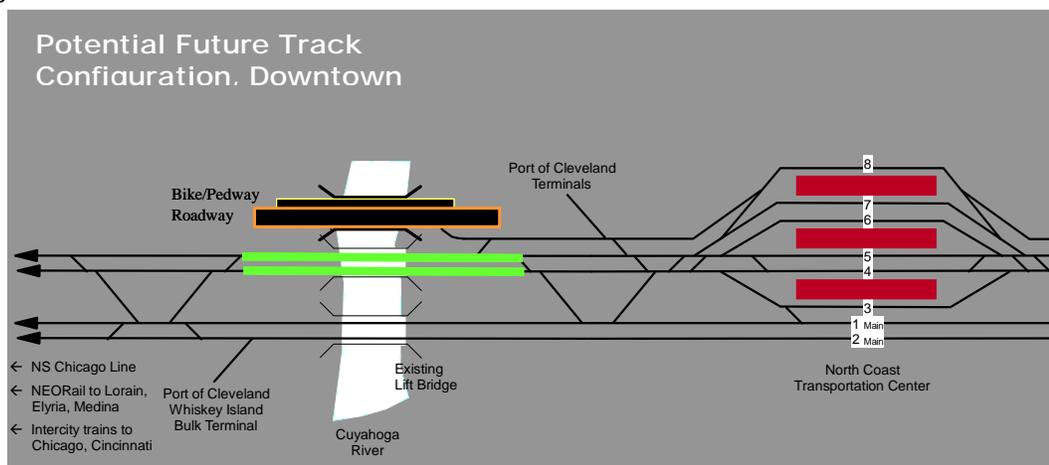
for a downtown intermodal passenger transportation center. The NEORail Study reaffirmed this site as the preferred station location, which offers integration with GCRTA's Waterfront Transit Line, Amtrak service, buses and auto traffic. The Intermodal Hub site is also located adjacent to many downtown uses, including the Browns Stadium, Rock-and-Roll Hall of Fame and Museum, Great Lakes Science Center, downtown businesses and government buildings.

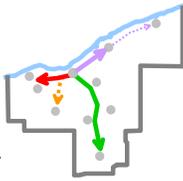
The study also identified the former East 26<sup>th</sup> Street Yard, alongside the CSX tracks east of downtown, as the preferred location for a downtown train storage and maintenance yard.

## Increasing Capacity Through Cleveland

The single, two-track lift bridge crossing the Cuyahoga River is a major choke point in the rail system through Cleveland that limits the capacity of the system to accommodate commuter rail.

Long-term options for opening up the bottleneck at the Cuyahoga include building a new high-level bridge, replacing the existing lift bridge with a larger one, and adding additional bridges to supplement the existing one. Each of these options has its merits and drawbacks. These options would be expensive but would add significant capacity to the rail network for freight and passenger use.





A shorter term and potentially less expensive option, the proposed Erie-Nickel Plate Connection, would provide an alternative route through Cleveland for many NS freight trains, creating a double track route that would allow traffic to cross on the Nickel Plate bridge over the Cuyahoga River south of downtown Cleveland. The project would benefit all of the potential NEORail routes by diverting freight trains away from downtown Cleveland and the Lakefront. This option would defer or possibly eliminate the need for a new Cuyahoga River bridge at the lakefront.

### **Downtown Akron**

Several rail lines converge, intersect and cross each other in the vicinity of downtown Akron. There are three potential sites for a commuter rail station serving downtown Akron:

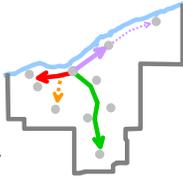
- Quaker Square, on the CSX Newcastle Subdivision (the current Amtrak station site)
- North Main Street, on the Wheeling & Lake Erie Railroad (former station site)
- North Howard Street, on the Cuyahoga Valley Scenic Railroad alignment (site of the recently-constructed station for the scenic railroad).

Each of the three sites has advantages and disadvantages. A site for storage and maintenance of commuter rail trains also is required at Akron, directly accessible to the station. As of the date of this report, a preferred station site had not been identified, and the City of Akron had indicated a willingness to consider all three options. The siting of the Akron station will be determined at a later stage of the implementation process, perhaps as part of the Canton-Akron-Cleveland major investment study, and will depend upon factors such as local policy and development priorities in the City of Akron and the extent to which agreement can be reached with CSX Transportation concerning commuter rail access onto or across their right-of-way. A feasible railroad alignment and operating plan can be developed for any of the three sites.

For purposes of analysis in NEORail Phase II, the Quaker Square site is assumed to be the location of the Akron commuter rail station. The plan and cost estimates allow for the construction of commuter rail tracks and station facilities that are operationally independent of the CSX mainline traffic, including a rail flyover from the Hudson branch line at Arlington Street and new dedicated commuter tracks parallel to the CSX main tracks from Arlington Street to Quaker Square. The station is assumed to consist of a new island platform with two platform tracks (separate from but adjacent to the current Amtrak station), with a new pedestrian bridge accessing both platforms. It may be possible to reduce the implementation cost of commuter rail in this corridor by selecting one of the alternative station locations, entering into an agreement with CSX Transportation to permit commuter trains to cross the freight mainline at grade, or constructing a more modest station and storage/maintenance facility.

### **Evaluating the Corridors**

The seven NEORail corridors were evaluated against criteria set by the CRAC. The seven evaluation criteria included: ridership, costs, cost-effectiveness (cost per rider), coordination with the freight railroads, development potential around stations, local political and financial support, and consistency with regional goals. Overall, Corridors 1 (Lorain) and 6 (Aurora) scored highest in terms of all seven of the evaluation criteria. The following table summarizes the results of the comparison.



### Summary of Evaluation Results for Individual Corridors

	<b>1 Lake West</b> Lorain	<b>2 West</b> Elyria	<b>3C South West</b> Medina	<b>4 South</b> Via Hudson	<b>5 South</b> Via Kent	<b>6 East</b> Aurora	<b>7 Lake East</b> Ashtabula
<b>Effectiveness (ridership)</b>	Medium-High	Low-Medium	Low	High	High	Medium-High	Medium
<b>Capital Cost</b>	Low Cost	High Cost	Medium-High Cost	Medium-High Cost	Medium-High Cost	Low Cost	Medium Cost
<b>O&amp;M Cost</b>	Medium Cost	Medium Cost	Medium Cost	Medium-High Cost	Medium-High Cost	Medium Cost	Medium-High Cost
<b>Cost-effectiveness</b>	High	Low	Low	Medium	Medium	High	Medium
<b>Railroad cooperation</b>	Medium-High	Low-Medium	Low-Medium	Medium	Medium-High	High	Low-Medium
<b>Development potential</b>	Medium	High	Low	High	High	Medium	Low-Medium
<b>Regional goals</b>	Medium-High	Medium	Low-Medium	Medium-High	Medium-High	High	Medium
<b>Local support: (political, financial)</b>	Mixed	Good	Low at this site	Mixed	Mixed	May be gaining	Good

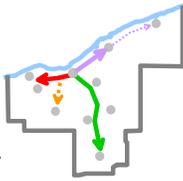
### Recommendations

On January 17, 2001, CRAC considered the results of the corridor analysis in a "Tiering Workshop." Members of the CRAC, NOACA staff and consultants discussed the analysis results and developed a tiering schedule in which the full commuter rail network could be developed in three phases.

To be feasible and justifiable, investments in commuter rail must be cost-effective, generating ridership and other benefits commensurate with the cost.

The NEORail Study has shown that larger commuter rail networks with multiple branch lines increase the potential for rail to serve trips across or through the city center, better meet the regional development and mobility goals, and achieve economies of scale that enable fixed costs to be spread over a larger ridership base.

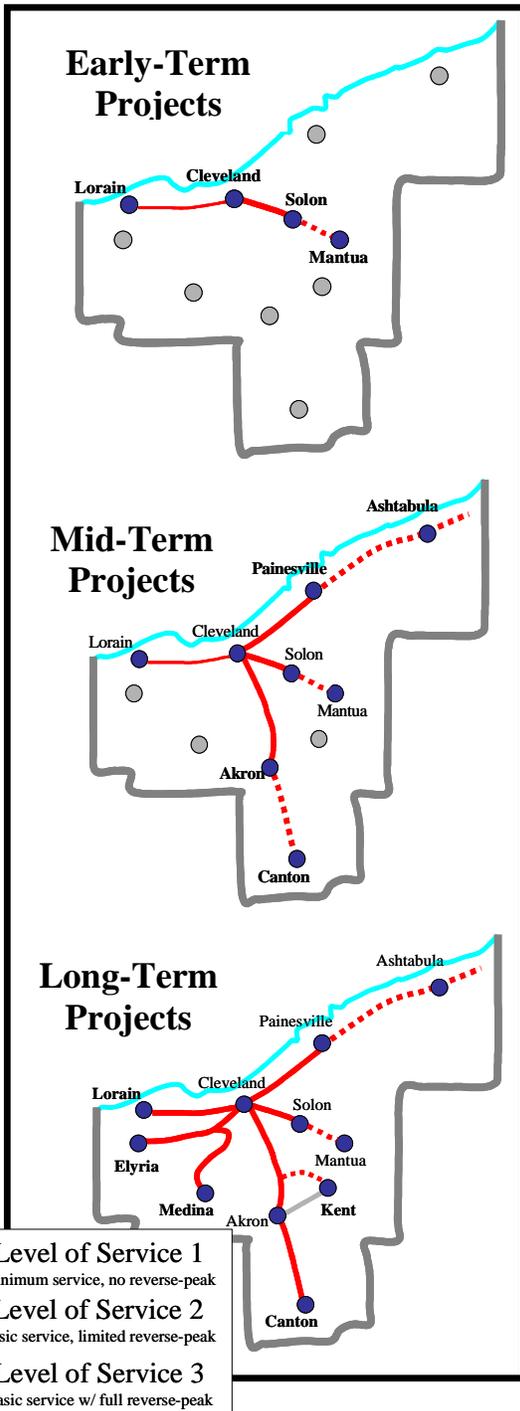
The point of diminishing returns can be reached, however, in corridors that compete for the same riders as other parallel corridors and where implementation difficulties or right-of-way constraints considerably raise the incremental capital cost. The financial resources of the region are limited and the cost of commuter rail implementation is high, necessitating a phased approach to implementation.

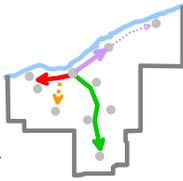


Therefore, the NEORail Phase II Study has developed the following findings and recommendations:

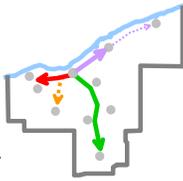
## Phasing Strategy

1. The commuter rail network in Northeast Ohio that best achieves the region's development and mobility goals in a cost-effective manner comprises four routes radiating outward from Cleveland:
  - [1] Lake West corridor to Lorain
  - [7] Lake East corridor to Painesville and Ashtabula County
  - [6] East corridor to Aurora and Mantua
  - [4] South corridor to Akron and Canton via Hudson
2. The CRAC recommends an early project to initiate commuter rail service in the Lake West and Southeast corridors. An MIS will be required to secure federal funding for commuter rail in this corridor. This project offers the best opportunity for early success:
  - Commuter rail service would be provided westward to Lorain and eastward to Aurora and Mantua.
  - It is the most cost-effective of all the combinations of routes and services examined in the study, in terms of riders attracted to the service for the dollars expended to create the service.
  - It should be possible to implement this service in a reasonable amount of time, given that Norfolk Southern (NS) is the only freight railroad materially affected, the proposed plan offers significant capacity and cost-savings benefits to NS to compensate for the use of its right-of-way, and the proposed alignment results in minimal interference of commuter trains with freight operations.
  - It provides early service to both the east and west sides of the region.





3. Extension of the commuter rail network into the South and Lake East corridors should proceed as soon as practicable, so that the benefits of a regional rail network can be realized as soon as possible and have the greatest effect on regional development patterns. Development of one or both of these routes could proceed simultaneously with implementation of the recommended early project, provided local support can be garnered, sufficient funding is made available and agreements can be negotiated with the rail freight right-of-way owners. The implementation process can proceed largely independently in each corridor, since they are physically separate from one another and have distinct geographic and political constituencies.
  - South Corridor (Canton-Akron-Cleveland):  
The final alignment, configuration, operating characteristics and implementation phasing will be determined by the ongoing MIS for the CAC Corridor. NS, CSX and the Wheeling & Lake Erie Railroad all will be involved in discussions and negotiations to initiate commuter rail service in this corridor.
  - Lake East (Cleveland-Painesville-Ashtabula):  
An MIS will be required to secure federal funding for commuter rail in this corridor. CSX Transportation is the right-of-way owner of the entire route, as described in the NEORail II Study. The MIS should address alternative rail routings (i.e., service via University Circle instead of Collinwood) as well as alternative modes in this corridor.
4. Early action should be taken to preserve rights-of-way for potential future additions to the network, and conditions should be monitored for changes that could affect the feasibility, performance and configuration of rail service in additional corridors.
  - West Corridor, Cuyahoga River Crossing and Hopkins Airport:  
Measure the extent to which the Erie-Nickel Plate Connection is able to divert freight traffic away from the lakefront. Monitor the progress of intercity passenger rail initiatives and coordinate planning and engineering efforts with those studies. Participate in long-range master planning for Hopkins International Airport with a view towards assessing the potential for creation of a passenger rail station and multi-modal hub at the air terminal. Work cooperatively with various potential stakeholders to identify the characteristics, costs and implementation timing of a new bridge crossing of the Cuyahoga River at the lakefront. Coordinate efforts with all of the above and seek funding partnerships that could spread the high cost of infrastructure among multiple beneficiaries and potentially advance the timing of investment.
  - Portage County (Streetsboro & Kent) and Medina County (Medina & Brunswick):  
Provide bus connections to the regional rail network in an early phase of development. Monitor the pace and patterns of residential and employment development in these counties for changes from the assumptions made in the NEORail II Study. Evaluate alternative long-term alignments and modes for expanded public transportation service in these counties, including potential extensions of the regional rail network.

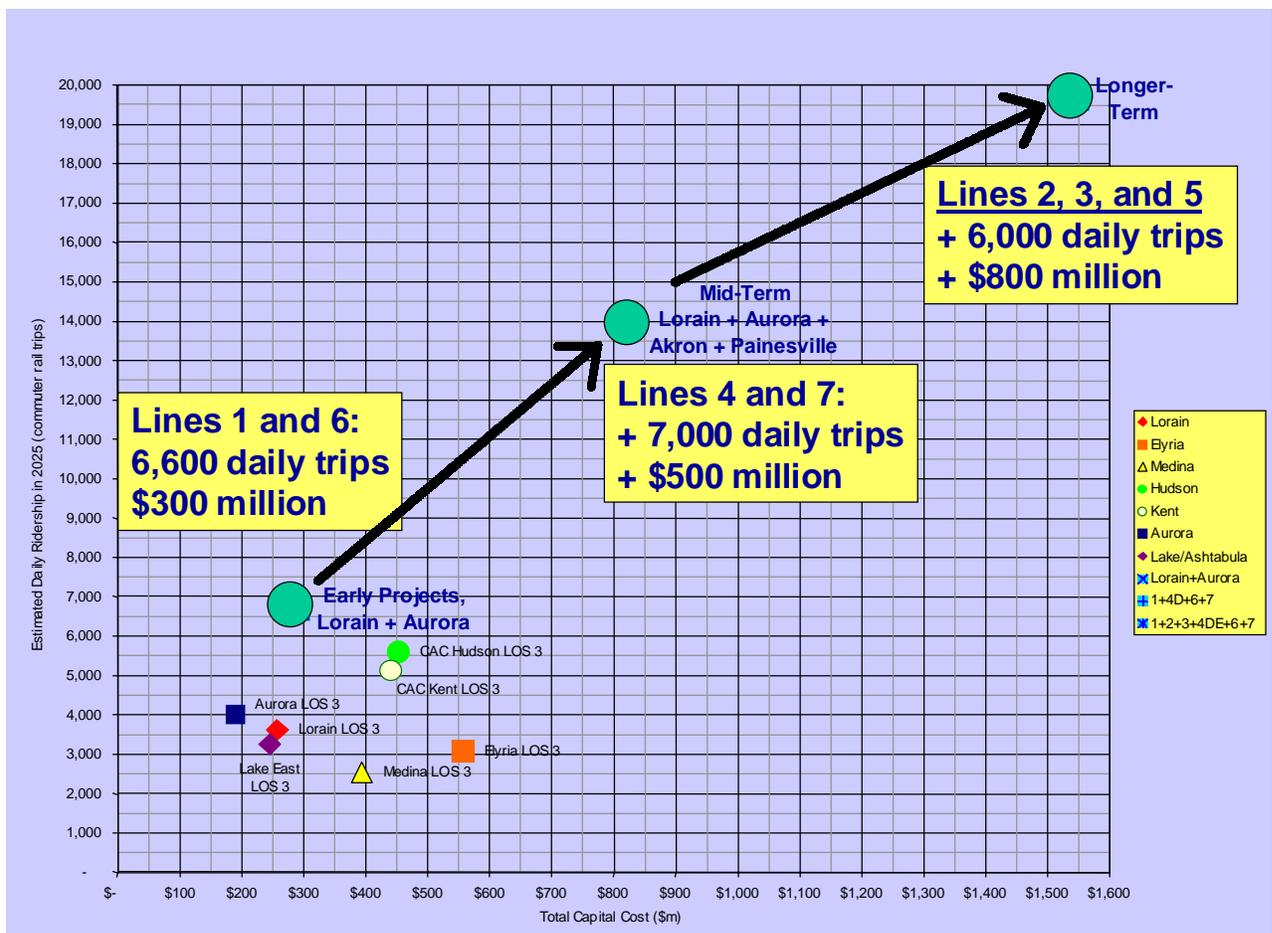


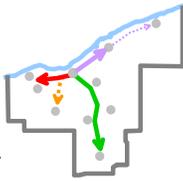
The detailed definition of the network configuration and service patterns will be subject to refinement during subsequent planning efforts. Implementation will be able to occur in phases, as demand for service increases and funds become available over time.

As the adjoining graphic shows, the Phase I lines (1 and 6) are the most cost effective, carrying around 6,600 daily trips at a cost of \$300 million. Adding lines 4 and 7 in Phase II adds more than 7,000 trips at a cost of around \$500 million. Lines 2, 3 and 7 in Phase III would double the cost of the system and would add around 6,000 daily trips.

The CRAC endorsed the tiering and phasing schedule in March, 2001, with some amendments resulting from public comments. Their recommendations were endorsed by the NOACA Board in April. It is possible that subsequent decisions and events, such as changes in the availability of funding or of rail right-of-way, may alter this phasing at some time in the future.

### Costs and Benefits of Commuter Rail Routing Combinations





## **Public Involvement**

Nine public meetings were held in February 2001 to obtain public comment on the CRAC's tiering recommendations. Meetings were held in each of the seven NEORail corridors. The meetings reflected community interest in regional commuter rail in Northeastern Ohio, including skepticism about the levels of local support for implementation and for supporting the required investments. Many commenters were interested in learning details of the system's operations. Direct opposition to commuter rail was largely confined to residents whose homes adjoined affected rail rights-of-way. Additional comments questioning whether the potential ridership warranted the large investment were common.

Interviews with more than 50 stakeholders—political and civic leaders from around the region—and nine community meetings were held during the second phase of the study to get public input and assess the level of public support for commuter rail in the region.

## **Finance and Administration**

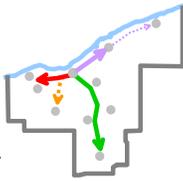
The financing and governance options considered in the study concentrated on the four-corridor system consisting of the Early-Term (Phase I) and Mid-Term (Phase II) Corridors. The options for administering the operations of the commuter rail system could include

- governance by the State of Ohio through the Ohio Department of Transportation (ODOT) or the Ohio Rail Development Commission (ORDC);
- operation by one of the existing regional transit authorities (RTAs) serving the region, such as Greater Cleveland Regional Transit Authority (GCRTA) or METRO RTA in Summit County;
- creation of a new regional commuter rail authority, or
- an inter-local agreement between the existing local RTAs.

The analysis of these options indicated that there is no compelling technical reason to favor one of these governance options over another. The CRAC has elected not to recommend a specific governance option in this phase of the study.

The feasibility of commuter rail in large part hinges on the availability of funds to pay for building and operating the system. Development and operation of the system would likely require a combination of federal, state and local funding sources. It has been determined that existing levels of funding could not support both the continued operation of existing systems and the development and operation of the proposed commuter rail system.

A variety of governmental grant and loan programs at the federal, state and local levels are available to fund the system. The draft financial plan assumed that 50% of the costs of the system's development could be funded through federal grant programs such as the Federal Transit Administration's New Starts program. The plan assumed that the remaining costs would be split evenly between State of Ohio grant programs and local sources. The local share of the capital costs and the operating subsidy requirements for the Early-Term and Mid-Term systems (Phases I and II) could be met with a funding stream, in year 2000 dollars, of around \$30 million



per year. The revenue could be generated through several local options that are available. In Northeast Ohio, a primary source of both local capital and operating revenue for public transit is a locally enacted sales and use tax, commonly called a "piggyback" tax on Ohio's 5% sales tax. Local tax options will require voter approval. Local tax increases, however, are not the only option for generating the local share of funding and, at this point, have not been recommended by the CRAC.

Both the financial and governance options should be widely discussed in an open public forum to consider all the issues related to implementation of commuter rail and to reach a regional decision on whether to advance commuter rail to the next planning level.

## **Conclusion**

The primary objective of the Northeast Ohio Commuter Rail Feasibility Study (NEORail), Phases I and II, was to provide the region's decision-makers with information necessary to make an informed decision on initiation of commuter rail service in northeast Ohio. A significant amount of data regarding the cost and operation of commuter rail service in northeast Ohio has been collected, analyzed and presented to the public as well as the region's decision-makers. The final study recommendations represent an objective analysis of the data and outline a logical, phased plan for implementation of commuter rail service should the region decide to proceed. The plan includes reasonable and potential funding options for both capital and operating expenses recognizing that no federal, local or state funds are currently available, authorized or appropriated to cover any development or operating costs. Identification of the entity that would operate the service is a future issue to cover if a regional decision to implement is reached. The study offers several governance options for consideration if that point is reached.

Also, and this cannot be emphasized too strongly, this study has attempted to concentrate on the objective analysis of data and not be influenced by factors which cannot be quantified. The significant public debate that must take place leading to a regional decision whether or not to pursue implementation of commuter rail will provide ample opportunity for debate of these issues in an open forum.

Finally, the study reflects an analysis of the best data and information available at the time of the study was being conducted. The freight railroad industry is and has been in a major state of flux since the division of Conrail's assets between NS and CSX. The future extent of intercity rail passenger service in the region also cannot be predicted at this time. Conditions are changing constantly and will need to be continually monitored, and the conclusions of the NEORail Study revisited as necessary in light of these changes.