

The Old Colony Railroad Rehabilitation Project

Developing a transportation plan involves reviewing alternatives to determine which best meet transportation needs, are technically & environmentally sound & reflect community goals.

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Southeastern Massachusetts has been the state's fastest growing area in population over the past decade. This growth, particularly that of the working-age population, has led to increased congestion on existing highways and transit facilities servicing this area. Continuing residential growth in Southeastern Massachusetts communities, combined with commercial development in downtown Boston, has resulted in an ever-increasing travel demand that will be impossible to satisfy. Unlike other parts of the metropolitan area, there are no adequate or attractive travel alternatives to the private automobile for many commuters who are faced with these increasingly congested facilities.

The Massachusetts Bay Transportation Au-

thority (MBTA) and the Urban Mass Transportation Administration (UMTA) have undertaken the Old Colony Railroad Rehabilitation Project to improve transportation services to Southeastern Massachusetts. This project has involved an extensive alternatives study for improving transportation services in the region. The alternatives involving the restoration of commuter rail service make use of four existing railroad rights-of-way — the Main Line, the Middleborough Line, the Plymouth Line and the Greenbush Line. All of these lines, some 80 miles in total length, were part of the former Old Colony Railroad system that ran through Southeastern Massachusetts (see Figure 1).

Following a scoping and screening process, in compliance with state and federal environmental regulations, the MBTA and UMTA completed and circulated a Draft Environmental Impact Statement/Report (DEIS/DEIR) in May 1990. In the DEIS/DEIR, six alternatives were selected and studied in detail:

1. No-Build.
2. Transportation Systems Management (TSM).
- 3a. Commuter Rail from South Station to Middleborough.
- 3b. Commuter Rail from South Station to Middleborough and Plymouth.

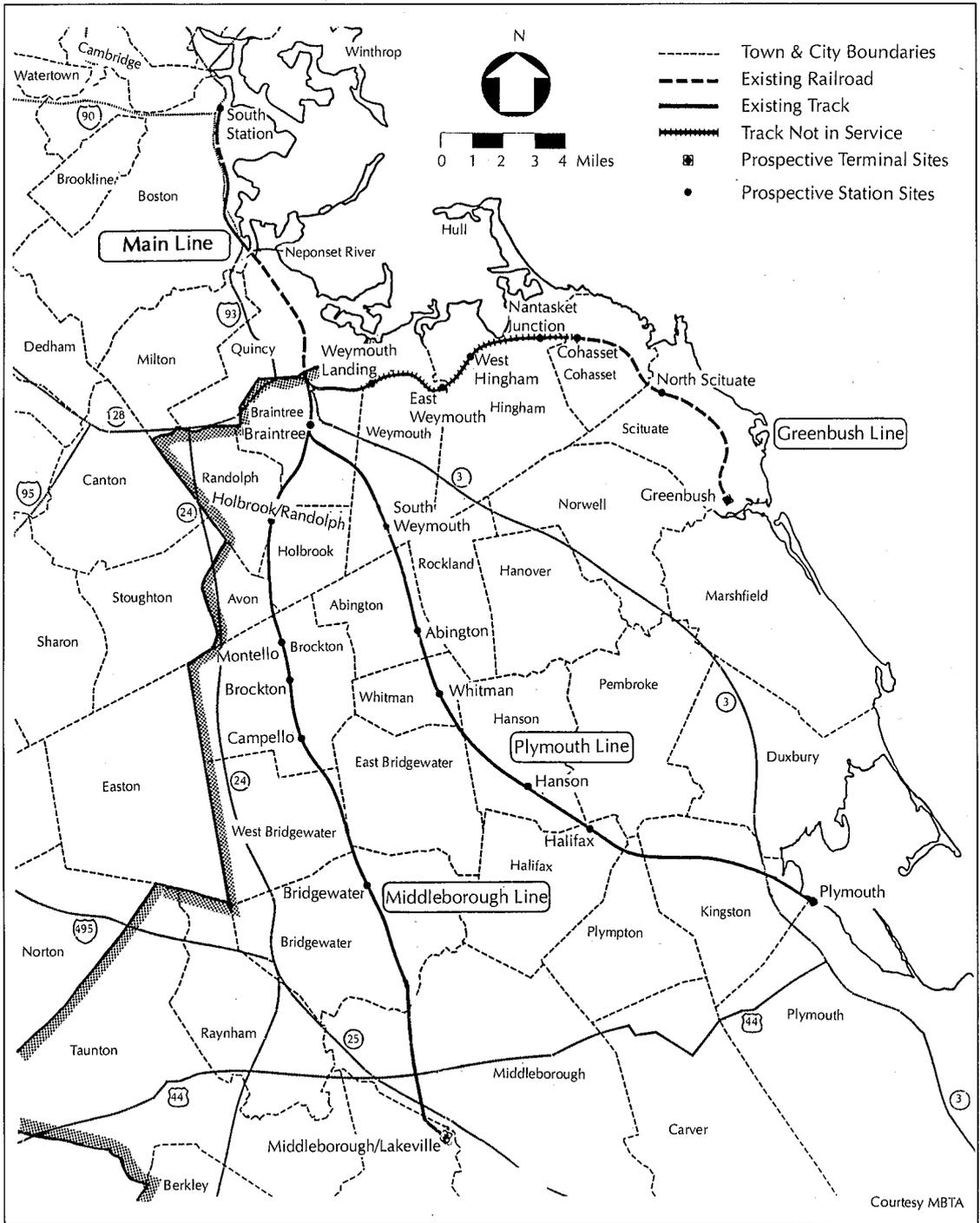


FIGURE 1. Old Colony study area and railroad system.

3c. Commuter Rail from South Station to Middleborough and the Greenbush area of Scituate.

3d. Commuter Rail from South Station to

Middleborough, Plymouth and Greenbush.

After an extensive public review and comment period that lasted until the fall of 1990, the

MBTA and UMTA decided to proceed with project development by preparing a Final Environmental Impact Statement/Report (FEIS/FEIR) for the restoration of commuter rail service on the Main Line, the Middleborough Line, and the Plymouth Line, a modified version of Alternative 3b. This project involves the restoration of almost 60 miles of railroad rights-of-way, the construction of a 1,200-foot-long bridge over the Neponset River, and the construction of 14 new railroad stations and four park/ride lots. The preparation of the FEIS/FEIR has been completed and circulation of the document will take place this fall.

Restoration of commuter rail service on the Middleborough and Plymouth lines does not address the transportation needs of the Greenbush Line corridor. To respond to comments reflecting opinions that the alternatives involving restored commuter rail service on the Greenbush Line may have significant impacts on historic resources near the existing rights-of-way, UMTA requested that the MBTA undertake a Section 4(f) Evaluation for some historic sites in Hingham, including the Lincoln National Register District which abuts the Greenbush Line rights-of-way. In this Section 4(f) Evaluation, the MBTA will study reasonable and prudent alternatives to the restoration of commuter rail service on the Greenbush Line and will consider all reasonable measures to avoid use of, and minimize harm to, protected historic sites. The Section 4(f) Evaluation for the Greenbush Line is expected to be finished by the end of 1991.

The Project Area

Study Area. The Old Colony study area includes 32 communities extending south from Braintree towards the Cape Cod Canal and Buzzards Bay and west from Massachusetts Bay to Route 24 (see Figure 1). These communities, along with Quincy and Boston, represent the area that would be affected by the transportation alternatives under review. The study area encompasses approximately 450 square miles and includes heavily urbanized areas such as Brockton and Quincy, some large suburban towns such as Weymouth and Braintree, and many areas with a rural character

and developable land.

The "Old Colony" designation for the area refers to its origins as the first British colony in the northeast, established at Plymouth in 1620. The Massachusetts Bay Colony, established in Boston somewhat later in 1630, grew larger than the Plymouth settlement and eventually incorporated the older colony. The term "Old Colony" was widely used during the nineteenth century, and was adopted by an early railroad company that provided passenger and freight service in the area.

Many of the long-established Old Colony study area communities are now experiencing, and are projected to continue to experience, population and development growth. In 1980, the total population of the study area was approximately 600,000 people. By the year 2000, the study area population is projected to increase by about 100,000 people. This projected growth rate is expected to exceed that for the Boston metropolitan area as a whole by as much as five to ten percent. The Old Colony area work force has a strong orientation to Boston. A substantially higher proportion of the work force commutes to Boston and Cambridge for work than the work force from north and west of Boston. Sixteen percent of total work trips from the Old Colony area are to Boston and Cambridge, compared to eight percent from the northern communities and twelve percent from the western communities.

History of the Old Colony Railroad Lines. Passenger railroad service was established throughout the Boston metropolitan area in the mid-nineteenth century, including extensive service in southeastern Massachusetts. In November 1845, the Old Colony Railroad established a passenger line from Boston to Plymouth. Service to Middleborough and beyond to Fall River was provided in 1846 by the Fall River Railroad, which merged with the Old Colony in 1854. Passenger service was provided to Cohasset in 1849 and to Kingston by 1874 via the South Shore Railroad, which also became part of the Old Colony system in 1877.

By 1893, when the Old Colony Railroad became part of the New York, New Haven and Hartford system, the Old Colony included a

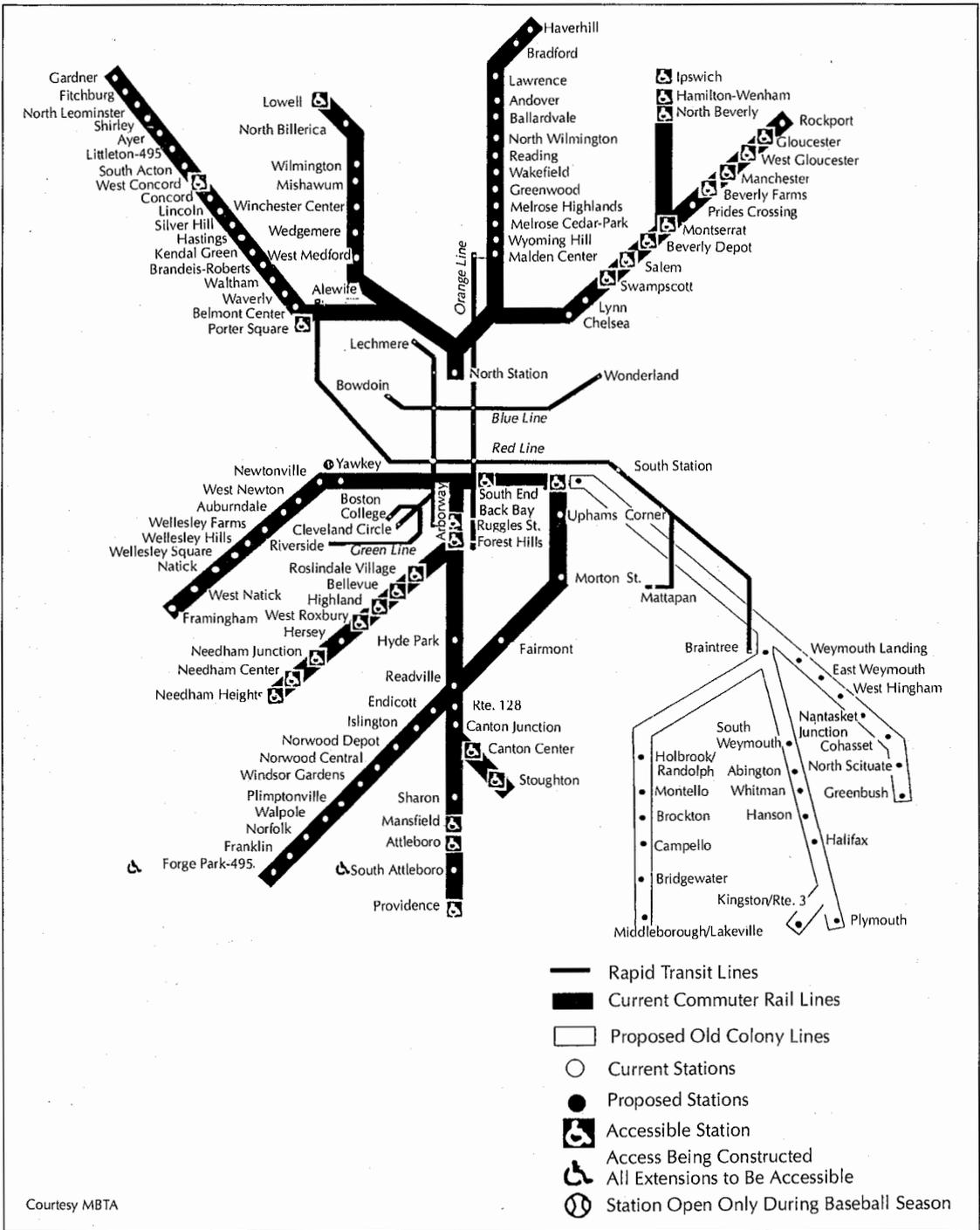


FIGURE 2. MBTA commuter rail system.

large network of rail lines extending from Boston, Lowell and Fitchburg to Cape Cod and Providence. Double-tracked lines extended as far as Greenbush on what is now

known as the Greenbush Line, as far as Whitman on the Plymouth Line and beyond Middleborough on the Middleborough Line. Four tracks were in operation from South Station in



FIGURE 3. A view of the existing Plymouth line track in Abington. The project includes rights-of-way improvements to modern commuter rail standards allowing up to 60 miles per hour passenger service.

Boston as far as North Quincy.

Passenger rail service and ridership reached a peak in the metropolitan Boston area in the early 1900s. However, faced with increasing competition from automobiles, diesel buses and electrified rapid transit lines and streetcars, railroad service throughout the metropolitan area declined after World War I. Most of the second track on the Old Colony lines was removed by 1941. World War II's fuel rationing and employment boom resulted in a temporary increase in ridership, but major service cuts in 1949 reflected the long term loss of ridership. By 1956, the New York, New Haven and Hartford Railroad was eager to discontinue what it felt was a very unprofitable passenger service on the Old Colony system. Court orders and a one-year state subsidy kept service operating

until June 30, 1959, when passenger service finally ceased on the Greenbush, Plymouth and Middleborough lines.

While those three Old Colony lines were the first to go, a similar fate threatened the other commuter railroad lines serving Boston. In July 1959, the Massachusetts legislature created the Mass Transit Commission to study this and other transportation problems. In the early 1960s, on the recommendation of the commission, the state sponsored service experiments to determine whether commuter rail and express bus ridership would respond to service improvements and fare reductions. When the MBTA was formed in 1964, it began a comprehensive region-wide program of subsidizing passenger rail service. Unfortunately, by this time a 1960 fire had destroyed the Old

Colony line railroad bridge over the Neponset River making experimental service on the Old Colony Lines physically impossible. Any consideration of Old Colony commuter rail service was further de-emphasized when the MBTA extended Red Line rapid transit service from Boston to Quincy in 1971 and further south to Braintree in 1980.

With MBTA ownership and capital investments, the Boston area commuter rail system has shown substantial improvement in terms of service levels, equipment condition and reliability, and ridership. Today, commuter rail plays an important role in the transportation network in all parts of the metropolitan area except the Old Colony study area (see Figure 2). Parts of the Old Colony rights-of-way have been in limited use for freight service over the intervening years, but in general they have been a dormant, vastly underutilized resource from the time commuter rail service stopped in 1959 (see Figure 3).

The Purpose & Need for the Rail Lines

Transportation Issues in the Study Area. Area highway and transit facilities do not meet future, or even existing, needs for access to Boston. The study area experiences severe highway congestion daily. All Old Colony primary highways operate at a level of service (LOS) C or worse during peak periods. For the Southeast Expressway, the main limited access highway connecting Boston to the Old Colony study area, LOS F (force flow conditions) last for four hours in the morning and for three hours in the afternoon. Based on traffic growth trends, Routes 3 and 24, the two limited access highways that feed into the Southeast Expressway, are expected to operate at LOS E by the year 2000. Parking facilities for commuters in downtown Boston and at transit stations are at capacity and opportunities for expanding these facilities are limited.

MBTA Red Line rapid transit service from Boston through Quincy to Braintree runs frequently during peak hours, but it extends only into the northernmost portion of the study area. It operates at or near capacity during peak hours. Parking lots and garages at stations are regularly filled to capacity on weekdays prior

to 7:30 a.m. Private express bus service, existing MBTA feeder service, service provided by other transit agencies and private, non-profit vanpool company are also area transit options, but are subject to severe congestion on the highway system.

The commuter boat service between the Hingham Shipyard and the Boston waterfront provides an attractive commuting alternative, but its market coverage is limited to the immediate area of the shipyard. The opportunities for expanded boat services in the Old Colony area appear very limited. In this environment, transit has a difficult time competing with the private automobile.

The congestion on major highways and secondary roads serving the Old Colony area and the crowding on the Red Line leads to significant travel delays and inconvenience. This congestion has an economic cost, measured in the cost of moving goods or the productivity of employees, and reduces access opportunities for residents and employees in the area. Anticipated growth in travel demand will put further pressure on transportation facilities that are now taxed to the limit. The end result will be increasing isolation of the Old Colony area residents from downtown Boston employment, educational and cultural opportunities.

In all other parts of the metropolitan area, commuter rail has been restored and upgraded to the point where it provides an attractive and reliable alternative for commuting into Boston. The residents of the study area have no comparable option. This inequitable distribution of transportation service options is the most glaring and the most often cited shortcoming of the current transportation system in the Old Colony area.

The Origin of the Project Concept. The Old Colony Railroad Rehabilitation Project originated as part of the ongoing system planning process. System plans are regularly re-examined, and additional studies of particular issues, system elements or particular corridors may be conducted. In the Boston area, this system planning is usually done by the Central Transportation Planning Staff (CTPS). The current status of system-wide planning is described in the Regional Transportation Plan. Under federal guidelines, the plan is reviewed

TABLE 1
Locally Adopted Metropolitan Boston Transportation Goals & Objectives

Goal	Objective
Improve Transportation Services to Improve Mobility	Increase Transit Capacity Reduce Transit Travel Time Increase Transit Accessibility Increase Transit Reliability & Comfort Increase Transit Ridership Reduce Parking Demand
Provide Transit Services That Are Cost-Effective	Maximize Use & Capacity of Existing Facilities Undertake Careful Analysis of All Projects
Provide a More Equitable Distribution of Transportation	Increase Services for Regions Now Poorly Served or Underserved Increase Access for Disabled Individuals or Individuals with Special Needs

by the Joint Regional Transportation Committee (JRTC), and revised and endorsed annually by the designated Metropolitan Planning Organization (MPO).

These regional plans continue to express the local commitment to devote more thorough attention to the role of the commuter rail network as part of the entire transportation system. As a result, the Massachusetts Executive Office of Transportation and Construction (EOTC) and the MBTA prepared a Commuter Rail Improvement Program (CRIP) that proposed the phased upgrading of the existing commuter rail lines. This blueprint for action has resulted in a continuing rail modernization program, and a larger, more modern fleet, improved signals, rights-of-way and stations.

In the early 1980s, there was a growing local perception that these system plans did not adequately address the transportation needs of the South Shore. In particular, it was noted that the CRIP effort did not cover the South Shore despite the existence of the Old Colony rights-of-way. Several South Shore communities conducted non-binding referenda that revealed that there was support for restoring commuter rail service. In 1984, the Massachusetts legisla-

ture formally requested that the Secretary of Transportation and Construction re-examine the transportation plans for the South Shore area, and report in particular on the feasibility of restoring passenger rail service on the former Old Colony lines. The Old Colony Feasibility Study of 1984 established concepts and cost estimates for providing commuter rail or other guideway transit services in the Old Colony study area.

As a result of the feasibility study, the MBTA and EOTC, working with the state legislature and other agencies in the area, identified the Old Colony study area as appropriate to be added to the rail modernization program and initiated the environmental studies of this project in late 1985.

The Goals and Objectives of the Project. The Old Colony Railroad Rehabilitation Project is part of a comprehensive effort to achieve a series of broad study area transportation and development goals, as well as specific objectives for improving the quality of transportation services and the equity of the distribution of services within the study area. These locally adopted goals and objectives, summarized in Table 1, support a broad, long-term study area

TABLE 2
Alternatives Development Process

Alternative	Alternatives Considered in the Feasibility Study	Alternatives Proposed for Further Study as a Result of the Feasibility Study	Alternatives Considered as a Result of the Scoping Process & the Public Involvement Program	Alternatives Proposed for Further Study as a Result of the Alternatives Screening Process
No-Build	No-Build	No-Build	No-Build	No-Build
Transportation Systems Management (TMS)	Diesel Bus Through Service From South Station to End Terminals	Diesel Bus Through Service From South Station to End Terminals	Improvements to Existing Diesel Bus Service & New Park-&-Ride Lots	Improvements to Existing Diesel Bus Service & New Park-&-Ride Lots
	Diesel Bus Transfer Service From South Station to End Terminals	Diesel Bus Transfer Service From South Station to End Terminals	Diesel Bus Service from Quincy Adams Station to Southampton St.	
	Red Line Service Improvements	Red Line Service Improvements		
Diesel Powered Locomotive	Diesel Powered Locomotive Through Service From South Station to End Terminals	Diesel Powered Locomotive Through Service From South Station to End Terminals	Diesel Powered Locomotive Through Service From South Station to Middleborough	Diesel Powered Locomotive Through Service From South Station to Middleborough
	Diesel Powered Locomotive Through Service From South Station to Intermediate Terminals	Diesel Powered Locomotive Through Service From South Station to Intermediate Terminals	Diesel Powered Locomotive Through Service From South Station to Middleborough & Plymouth	Diesel Powered Locomotive Through Service From South Station to Middleborough & Plymouth
	Diesel Powered Locomotive Transfer Service From Braintree Station to End Terminals	Diesel Powered Locomotive Transfer Service From Braintree Station to End Terminals	Diesel Powered Locomotive Transfer Service From South Station to Middleborough & Greenbush	Diesel Powered Locomotive Transfer Service From South Station to Middleborough & Greenbush
			Diesel Powered Locomotive Through Service From South Station to Middleborough, Plymouth & Greenbush	Diesel Powered Locomotive Through Service From South Station to Middleborough, Plymouth & Greenbush
Diesel Railcar	Diesel Railcar Through Service From South Station to End Terminals	Diesel Railcar Through Service From South Station to End Terminals		
	Diesel Railcar Through Service From South Station to Intermediate Terminals	Diesel Railcar Through Service From South Station to Intermediate Terminals		
	Diesel Railcar Transfer Service From Braintree Station to End Terminals	Diesel Railcar Transfer Service From Braintree Station to End Terminals		
Electric Powered Locomotive			Electric Powered Locomotive Service	
Trackless Trolley	Trackless Trolley Through Service From South Station to End Terminals			
	Trackless Trolley Transfer Service From Braintree Station to End Terminals			
Electrified Light Rail Vehicles	Electrified Light Rail Vehicle Through Service From South Station to End Terminals			
	Electrified Light Rail Vehicle Transfer Service From Braintree Station to End Terminals			
Red Line			Extension of the Red Line Along a Rte. 3 Alignment	

development and transportation strategy. The basic elements of this strategy are:

- Maintain downtown Boston as a strong economic hub for the study area so that the metropolitan area can remain economically sound and prosperous.
- Encourage transit-oriented development patterns to reduce the negative impacts of automobile dependency such as increased needs for highways and parking facilities, reduced air quality, other undesirable environmental effects and urban sprawl.

The Old Colony study area has been selected as a high-priority corridor by EOTC because of the major deficiencies in its current transportation system. Specific transportation problems in the Old Colony area include:

- Lack of transportation capacity to serve downtown Boston.
- Severe congestion on highways and transit facilities serving the study area.
- Inequitable distribution of transportation benefits.

The Transportation Alternatives Considered

The Initial Scoping and Screening Processes. The Old Colony Project benefitted from extensive public involvement during its scoping and screening process and environmental review. A wide variety of interested citizens, as well as federal, state and local officials and agencies, regional agencies and other public organizations and community groups were involved in the public involvement program. The end result has been a thorough and comprehensive review of alternative transit improvements that may be possible in the Old Colony study area. Table 2 summarizes the alternatives development process. Eight alternatives were identified in the Old Colony Feasibility Study as worthy of further analysis. These alternatives were:

- No-Build, in which all existing commuter transportation modes would continue to operate as they do now or with commit-

ted improvements.

- TSM, consisting of improvements to express bus service to Boston, feeder bus service to the Red Line and the Red Line itself.
- Commuter rail through service from South Station to end terminals at Middleborough, Plymouth and the Greenbush area of Scituate.
- Diesel rail car through service from South Station to end terminals at Middleborough, Plymouth and Greenbush.
- Commuter rail through service from South Station to intermediate terminals at Campello, either Whitman or Hanson, and West Hingham.
- Diesel rail car through service from South Station to intermediate terminals at Campello, either Whitman or Hanson, and West Hingham.
- Commuter rail transfer service from the Braintree Red Line station to terminals at Campello, either Whitman or Hanson, and West Hingham.
- Diesel rail car transfer service from the Braintree Red Line station to terminals at Campello, either Whitman or Hanson, and West Hingham.

Alternatives considered and rejected during the feasibility study were trackless trolleys on paved Old Colony rights-of-way and electrified light rail vehicles (LRVs) on existing Old Colony rights-of-way. While these alternatives have the advantage of reduced air and noise impacts when compared with commuter rail and diesel rail car technologies, they would include elements incompatible with existing commuter rail facilities and services, would impose undue constraints on rail freight operations and would require higher capital costs.

Several alternatives in addition to the eight proposed in the Old Colony Feasibility Study were introduced for consideration during the scoping and screening process. These additional alternatives were:

- Electrification of commuter rail service.
- Buses on paved Old Colony rights-of-way.

- Extension of the Red Line rapid transit along a Route 3 alignment.
- Sub-options under commuter rail through service making use of different combinations of lines.

As the scoping and screening processes progressed, capital and operating costs and benefits (quantified as market area coverage, ridership and travel time savings), engineering implications (such as physical feasibility, compatibility with existing facilities and services, and impact on freight operations), general environmental concerns and community inputs resulted in dropping several of the alternatives. Among those alternatives that were dropped were proposals for:

- The use of diesel rail cars.
- Commuter rail to intermediate terminals.
- Transfer to the Red Line rapid transit in Braintree.
- Electrification of commuter rail service.
- Buses on paved Old Colony rights-of-way.
- Extension of the Red Line rapid transit along a Route 3 alignment.

The No-Build, the TSM and the commuter rail sub-options were retained and subjected to detailed analysis in the DEIS/DEIR.

Alternatives Evaluated in Detail in the DEIS/DEIR. Six alternatives were examined in detail in the DEIS/DEIR (see Figure 4). These alternatives were:

1. No-Build. No further transportation improvements would be made beyond those now funded or committed.

2. TSM. Improvements to express bus service to Boston in order to achieve shorter peak period headways and reduce travel time and construction of 15 additional park-ride lots.

3a, 3b, 3c & 3d. Restoration of commuter rail service, with locomotive powered push-pull commuter rail train operations from South Station to terminals in Middleborough/Lakeville, Plymouth and Greenbush in Scituate. Four combinations of commuter rail service were considered. Al-

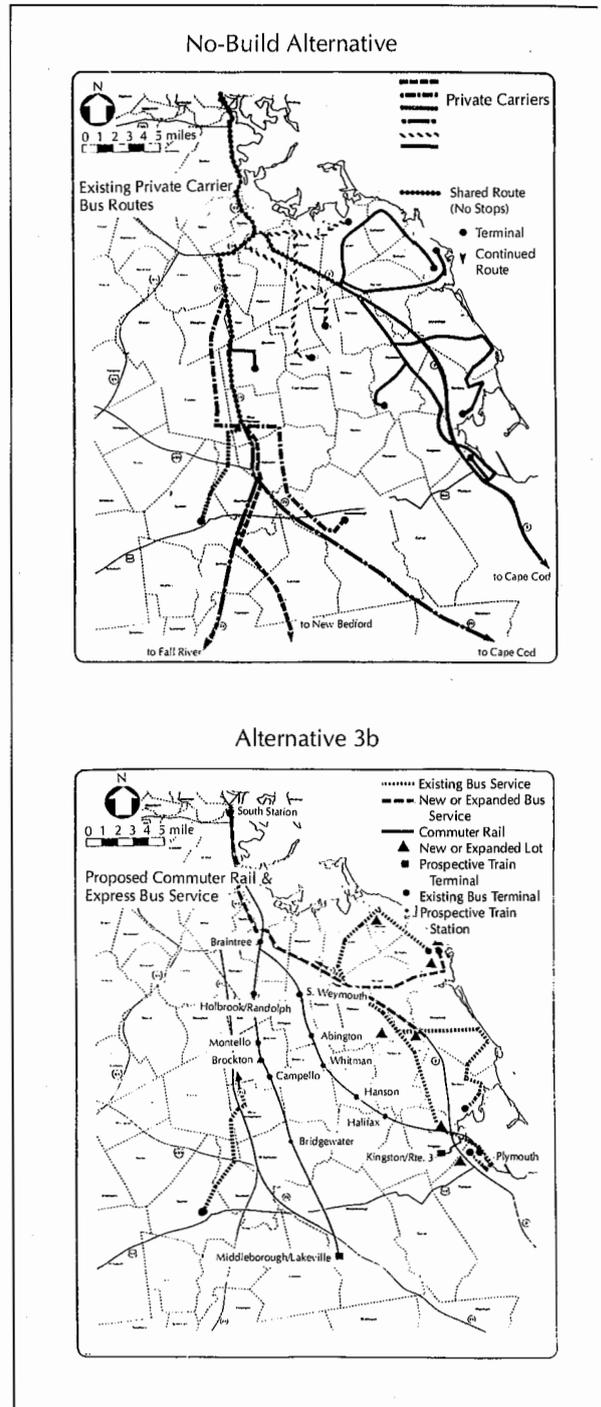
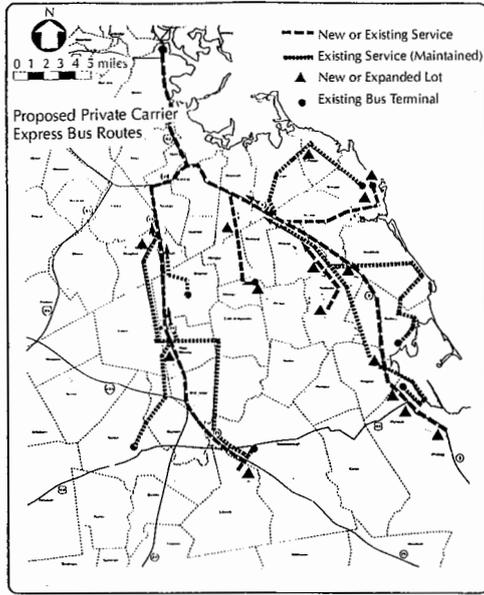


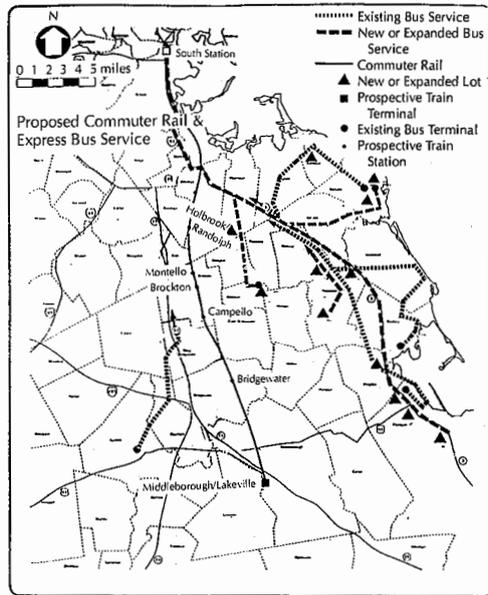
FIGURE 4. Alternatives evaluated in detail in the DEIS/DEIR.

ternative 3a included commuter rail service only on the Middleborough Line. Alternative 3b had service on the Middleborough

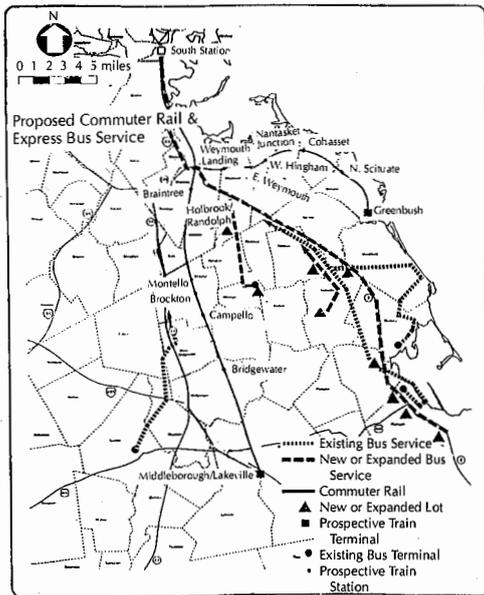
TSM Alternative



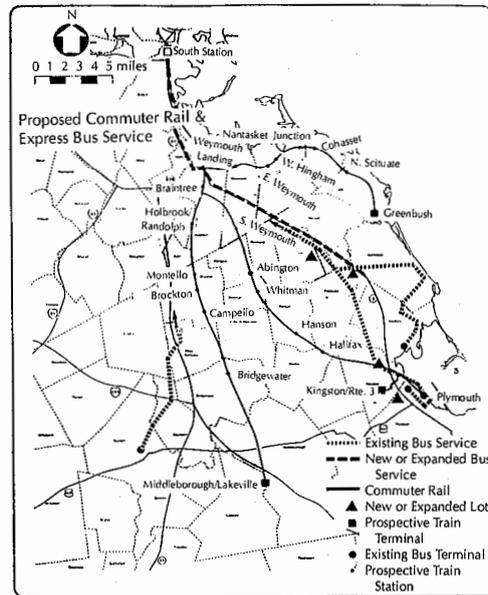
Alternative 3a



Alternative 3c



Alternative 3d



Courtesy MBTA

and Plymouth Lines. Alternative 3c included commuter rail service on the Middleborough and Greenbush Lines. Alternative 3d restored commuter rail service on all three lines. In all four alternatives, TSM improvements would be included in the Old

Colony area corridors not serviced by commuter rail.

Detailed analyses were conducted on these six remaining alternatives following UMTA's guidelines for transit project planning. These

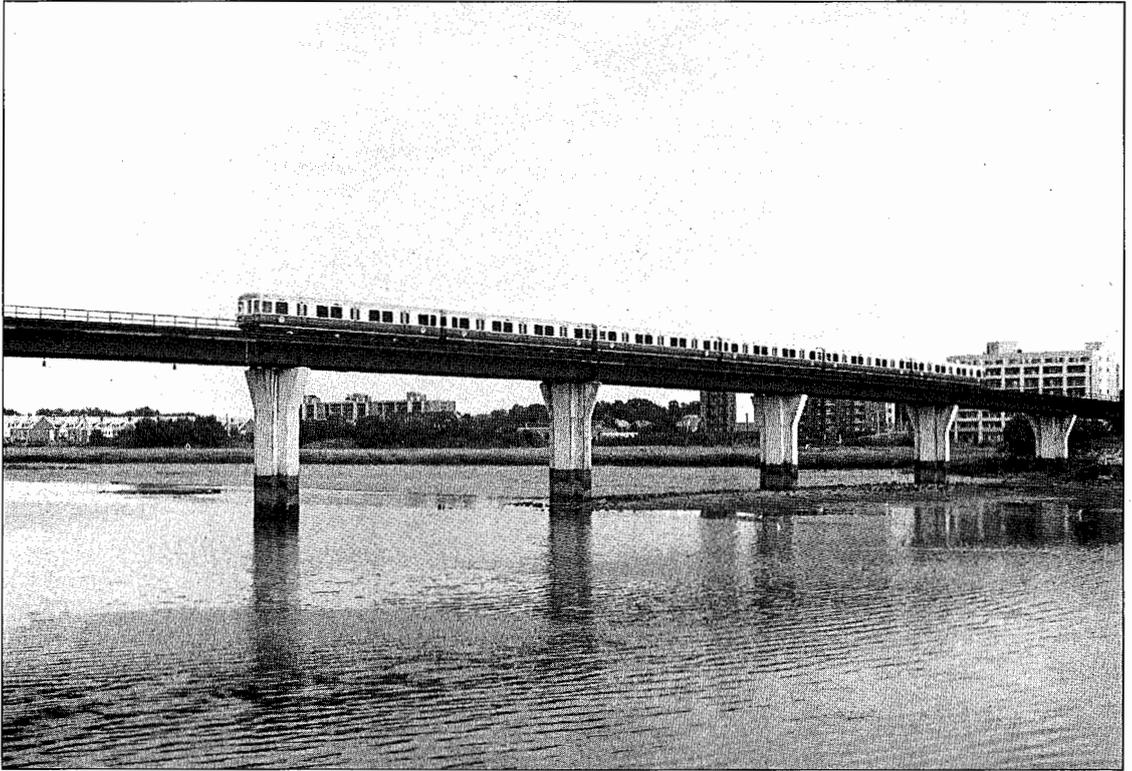


FIGURE 5. A view of the Neponset River. The Old Colony commuter rail bridge will parallel the Red Line transit bridge (shown) and will provide the same clearance above water.

analyses covered ridership projections and other transportation impacts using a ridership forecasting model that was accepted by UMTA for the Old Colony study area; capital costs based on conceptual (ten to 30 percent) engineering plans; operating and maintenance cost estimates based on detailed operating plans and UMTA's cost build-up approach; environmental concerns covering social and economic impacts, traffic and parking impacts, impacts to the natural environment, impacts on cultural resources and impacts during construction.

The financial capacity of the MBTA and the state to undertake the most expensive of the six alternatives, Alternative 3d, was evaluated. The alternatives were compared with respect to their cost-effectiveness in achieving the project's goals and objectives and their fairness in allotting the benefits and costs/impacts across different population groups. The trade-offs among the alternatives in terms of their costs, impacts and ability to

achieve the project's goals and objectives were deliberated.

Alternatives Being Advanced in the FEIS/FEIR. The DEIS/DEIR was completed and circulated in the May 1990. Three public hearings were held, many other public meetings were conducted and almost 2,000 public comments on the DEIS/DEIR were received.

Because the information presented in the DEIS/DEIR and comments received on the DEIS/DEIR indicated that the response to comments and the resolution of environmental issues related to the Greenbush corridor could not be addressed in the same time-frame as those related to the other Old Colony corridors, the MBTA and UMTA decided to proceed with the completion of the FEIS/FEIR for transit improvements in the three other corridors.

References to the Greenbush Line commuter rail improvements that are an integral part of Alternatives 3c and 3d, the Greenbush corridor express bus and related park-ride services that



FIGURE 6. A view of South Station in Boston. Old Colony trains will use the recently renovated station. Operational analyses for the project included occupancy simulation of South Station tracks by Old Colony trains, other commuter rail trains and intercity trains.

are included as elements of Alternatives 3a and 3b, and the service area of the Greenbush corridor, will not be included in the evaluation chapters of the FEIS/FEIR. Transit improvements on the Greenbush corridor will be assessed and documented in a supplemental environmental document.

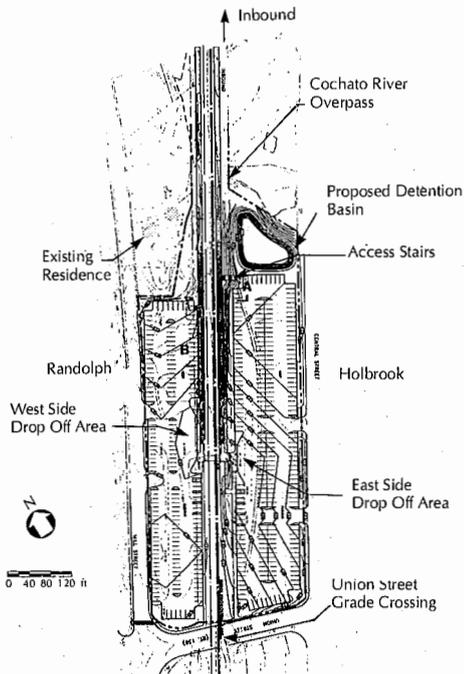
The Old Colony Project has created many interesting and challenging design and operations planning issues that needed to be resolved and that have had to be continuously better defined as the project has developed. The most prominent of these problems are:

- The design of the 1,200-foot-long, two-track Neponset River Bridge over a major navigable urban waterway in an area immediately adjacent to existing crossing

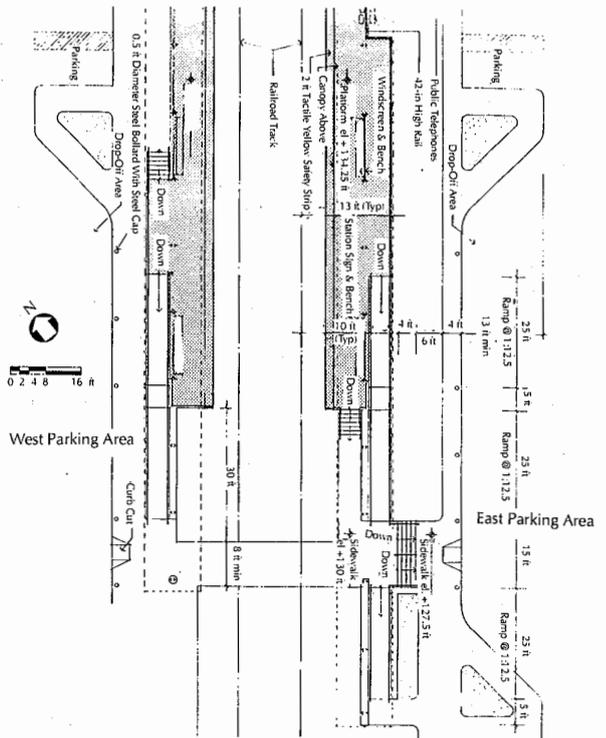
bridges, with extremely limited on-shore work space and with potentially contaminated dredge spoils to be handled (see Figure 5).

- The development of operational plans for a railroad system that will provide market-driven schedules on what is essentially a one-track system with active freight operations. The effort has involved implementing simulation approaches in order to optimize train operations, equipment usage and passing siding locations that will attain 20 to 30 minutes peak period headways (see Figure 6).
- The location and design of 21 train stations, three train layover facilities and 15 park/ride lots consistent with the operational requirements of the project, a min-

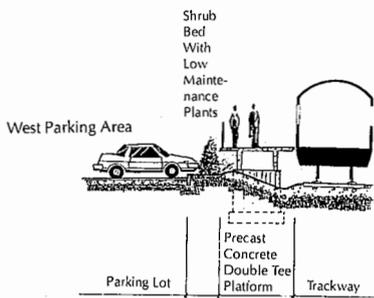
Site Plan



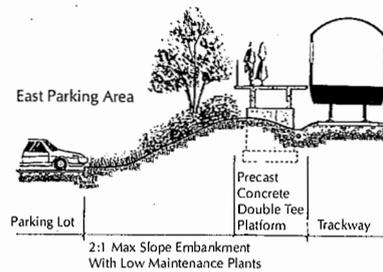
Access Plan



Cross Section



Section A
(Looking North)



Section B
(Looking South)

Courtesy MBTA

FIGURE 7. The Holbrook/Randolph station.



FIGURE 8. Old Colony stations will be similar in design to recently built MBTA commuter rail stations such as the Forge Park/495 station (shown), but with full-length, high-level platforms.

imization of environmental impacts and a sensitivity to the needs of the individual communities. Each of these facilities represents a major site development project in itself. The proposed Holbrook/Randolph Station, for example, is shown in Figure 7.

- The design of station platforms and access elements in order to fully comply with the Americans with Disabilities Act of 1990 and state ordinances regarding accessibility to public transportation. The system is being designed with full-length high-level platforms at every station (see Figures 7 and 8). Providing a cost-effective approach to these major design elements is an essential part of continued design development.

The Evaluation of Transportation Alternatives

Table 3 contains some of the results of the evaluation done to date on the four alternatives that are discussed in the FEIS/FEIR. The No-Build Alternative constitutes the base line against which all the other alternatives were evaluated. This alternative includes existing and committed transportation facilities. Clearly, it would have the lowest cost among the alternatives considered, but it would not provide additional travel options nor would it improve access to and from Boston and the Old Colony area. The No-Build Alternative would not result in a more equitable distribution of transportation benefits and would not support the economic development of Boston and the Old Colony

TABLE 3
Summary of Selected Results by Alternative

Impacts	1 No-Build	2 TSM	3a Middleborough (Modified)	3b Middleborough Plymouth (Modified)
Capital Costs (Million)*	\$ 0.0	\$49.1	\$281.0	\$453.0
Operating & Maintenance Costs (Million)**	\$12.3	\$16.5	\$ 20.2	\$ 23.8
Transportation Impacts				
Annual Transit Passenger Miles (Million)	176	189	215	237
Average Morning Peak Period Project Area Transit Travel Time (Minutes)***	53	51	46	45
Percent of Old Colony Residents Within 40 Minutes of Transit Travel Time to Downtown Boston	0	4	33	40
Annual Transit Passenger Miles on Dedicated Rights-of- Way (Million) [§]	58	58	110	144
Morning Peak Period Transit Inbound Ridership	12,700	13,400	15,700	17,400
Transit Mode Share for Morning Peak Period Inbound Trips Between Study Area & Boston & Cambridge (Percent)	17	18	21	24
Congestion Time Reduction on the Southeast Expressway ^{§§} (Minutes Each Direction)	—	6	30	49
Reduced Parking Demand as Percent of Current Capacity				
From Boston PMA	—	1	4	6
From Red Line South Shore Parking	—	0	0	2
UMTA New Trip Cost Effectiveness Index ^{§§§}	—	\$16.49	\$15.70	\$15.95

* Escalated to mid-point of construction.

** Annual costs in 1989 dollars.

*** Average of access, wait & line-haul time to Boston (South Station) for all current Old Colony riders in all transit modes.

[§] Includes commuter boat's line haul miles.

^{§§} North of Southampton Street, Boston. Congestion time reductions assume no change in drivers' behavior regarding time & route of travel.

^{§§§} Added annualized costs (capital & operating costs, net of travel time savings) per added new transit rider, build alternatives relative to no-build.

study area.

The three build alternatives all contribute in some degree to achieving the project goals. The TSM, Alternative 3a and Alternative 3b are progressively more successful in meeting the project goals, but at an increasing cost and an increasing extent of physical impact.

When comparing all the build alternatives for the Old Colony study area, the TSM would result in the lowest capital and operating outlays. The TSM would not address deficiencies in the transportation system at the regional and corridor levels. While the TSM may increase travel options somewhat, it would do little to reduce highway congestion and commuting time, and would be less attractive than commuter rail in drawing new transit riders. Consequently, the TSM alternative would be less effective in achieving the goals and objectives of the Old Colony study area. The commuter rail alternative would divert between 3,000 to 5,000 morning peak period auto commuters to transit, resulting in reduced highway congestion and parking demand in downtown Boston (up to six percent of the current capacity). Referring to Table 3, the TSM alternative would be less cost-effective than the two rail alternatives.

Of the two rail alternatives, modified Alternative 3a would require fewer capital and operating dollars. It only involves the Main and Middleborough Lines. The addition of the Plymouth Line under modified Alternative 3b provides major incremental improvements to the effectiveness of the service provided by the Middleborough Line alone. The addition of the Plymouth Line allows the high capital cost of the Main Line from Braintree to Boston to be distributed over a significantly higher level of use, but because of the added capital and operating costs, the cost effectiveness (added cost per added transit rider) of the two alternatives is about the same.

Modified Alternative 3b would be most effective in supporting the stated transportation and development objectives and goals of the project. This alternative would support the regional development and transportation strategy and address deficiencies in the current transportation system at the regional and corridor levels. Compared with the No-Build,

TSM and modified 3a alternatives, the modified Alternative 3b would provide the most travel options, attract the most transit riders, maximize transit travel time reductions, reduce highway and existing transit facilities congestion, most effectively reduce the regional isolation from Boston and result in a more equitable distribution of transportation benefits. Based on the MBTA's commitment to improved service, this alternative is being advanced as the preferred alternative in the FEIS/FEIR.

Next Steps to Project Development & Conclusions

The MBTA is close to completing the FEIS/FEIR. Final design and construction will begin by the end of 1991 once the FEIS/FEIR is circulated and UMTA announces its Record of Decision. The Greenbush Line Section 4(f) Evaluation is expected to be completed shortly thereafter, at which time decisions about the type of transportation improvements to be undertaken in that area will be made.

The commitment and effort of the MBTA and UMTA to improve transportation services in Southeastern Massachusetts, coupled with sound planning and engineering practices and a thorough public involvement program, have been key ingredients in moving forward one of the major commuter rail restoration projects undertaken in recent history. The substantial involvement of the public in the project from the earliest stages of the scoping and screening process and throughout the environmental review has built a consensus around the project's new ideas and proposals, facilitated the decision making in many design issues, and minimized problems early in the planning and project development. Most importantly, thanks to this timely public involvement, the project has been directed on a course of development that not only meets the transportation needs of the region and is technically and environmentally sound, but also reflects the perspective of the communities and people it will serve.

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