

SOUTH COUNTY COMMUTER RAIL SERVICE

OPERATIONS PLAN

PROVIDENCE TO WESTERLY, RI



JULY 2001

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

South County Commuter Rail Service

Rhode Island Department of Transportation

Operations Plan

Providence to Westerly, RI

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July 2001

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EXECUTIVE SUMMARY

Introduction

RIDOT desires to determine the operational feasibility and the cost of establishing commuter rail service over 43.8 miles of Amtrak's Northeast Corridor (NEC) between Providence and Westerly, RI (Figure ES-1). This project is known as the South County Commuter Rail Service (SCCRS). The operations planning effort for the proposed SCCRCS is being coordinated with the final Amtrak Acela Express and Acela Regional service which started in the Year 2000, with trains being added over the next few years as the new equipment comes on line. In addition to coordination with Amtrak's NEC operations, planning for the SCCRCS will also be coordinated with MBTA commuter rail service between Providence, RI and Boston, MA as well as the ongoing Freight Rail Improvement Project (FRIP) between Providence and Davisville, RI.

One of the primary goals of the operations planning effort is to provide an adequate description for the parameters of a commuter rail service that will be sufficiently attractive to riders. Given an adequate ridership base, the following major factors have proven historically to be important to the success of commuter rail systems in other locations:

- Trains that are clean and comfortable
- Trains that operate reliably and on-time
- Trip times that are competitive with auto
- Adequate scheduling and frequency of service
- Adequate parking facilities at stations
- Intermodal transfer capability where required
- Competitive trip costs

The ultimate success of the SCCRCS will depend largely on how well the above issues are addressed. Although some public funding will likely be required to continue operation after start up, the goal is to achieve ultimately a reasonable "fare box return". Normally, this is accomplished by increasing the ridership over the line, while controlling operating and maintenance costs.

Another important challenge is to define a system that has reasonable capital, operating and maintenance costs. This report identifies the infrastructure improvements necessary to support the SCCRCS and generally summarizes how the service is expected to operate according to a preliminary operating plan. At this early planning stage, the enclosed report has been developed using the most current information available. It also identifies the unresolved or open issues that could have a potentially critical impact on planning and an operation that will be successful. Where possible, and within the scope of this report, solutions are recommended for resolving these issues.

Project Description

In 1988, The Rhode Island Department of Transportation (RIDOT) re-instituted commuter rail service between Providence and Boston through the Pilgrim Partnership Agreement with the Massachusetts Bay Transportation Authority (MBTA). In 1995, The Pilgrim Partnership II Agreement extended the term of the agreement for an additional ten years and added service between the two cities.

Because of the success of the Pilgrim Partnership service, in 1992 the need for a commuter rail system in Southern Rhode Island was investigated during the Rhode Island Rail Corridor Feasibility Study. The service corridor deemed to be most favorable was the existing Northeast Corridor. Under this study an operating plan for commuter rail service between Providence and Westerly is being investigated and three basic alternatives are presented as a South County Commuter Rail Service.

The three alternatives are:

- Alternative 1 - a stand-alone commuter service between Providence and Westerly
- Alternative 2 - an extension of current Connecticut Department of Transportation (CDOT) Shore Line East service between New Haven and New London, CT.
- Alternative 3 - an extension of current MBTA service between Boston and Providence
An incremental extension of MBTA service to Wickford is included as an option to this alternative.

A stand-alone commuter service would utilize its own service fleet and operate solely within Rhode Island, utilizing cross-platform connections with the MBTA service at Providence. The service could be structured to run all trains to Westerly or to turn trains at intermediate stations. The service provides for peak period trains only. Off-peak or reverse peak service was not considered as part of the stand-alone service. It is anticipated that off-peak service can be coordinated with the Rhode Island Public Transit Authority (RIPTA). This service plan would require the purchase or lease of a fleet of locomotives and coaches.

RIDOT has also been examining a potential train shuttle service between Providence Station and the future Warwick Station utilizing the FRIP track. The shuttle would seek to increase the use of public transportation to the T.F. Green Airport from the central business district in Providence, particularly for business travelers. It could also help to connect the proposed Warwick re-development area to Providence. The shuttle is not part of the SCCRS program at this time and no capital costs are allocated for its service. However, the shuttle would take advantage of the capital investments being made for the FRIP and the Warwick Station, reducing the investment to initial vehicle costs and an annual O&M cost.

CDOT Shore Line East service to New London, CT was also reviewed as a possible service between Westerly and Providence. The current Shore Line East service terminates at New London, with some trains turning at Old Saybrook. Trains are currently stored at New Haven, deadhead out for the morning rush and then deadhead back to New Haven for storage at night. The proposal of extending current CDOT service east to Westerly and Providence is based primarily on the concept of having a joint CDOT/SCCRS overnight layover facility at Westerly, RI.

The current MBTA service into Providence can be extended to Westerly. Service would provide for peak period trains only. RIPTA buses could provide off-peak service. Modifications and additions to the

existing train schedule will be required to provide service to Westerly. This service plan anticipates utilizing the MBTA's fleet and supplementing this equipment as necessary.

Recently, RIDOT has held discussions with the MBTA for an incrementally staged SCCRS extending the current MBTA service to future stations at T.F. Green Airport and Wickford Junction. The talks initially addressed service to the Warwick Station being constructed under Transportation Equity Act-21 funding. However, since Warwick and Wickford together generate 70% of the projected SCCRS ridership, RIDOT pursued the extension to Wickford and high level discussions between Massachusetts and Rhode Island further emphasized this incremental approach as serviceable. An Alternative 3A is discussed within this Executive Summary to provide an understanding of the financial costs and service benefits from this approach.

Operations Planning

The conceptual plan for the SCCRS as originally proposed is to operate peak-period service from Westerly to Providence, RI in the morning and return during the evening. It is fully anticipated that SCCRS riders who desire to continue to Boston, MA will be able to do so by simply stepping across the platform at Providence and boarding an MBTA train. Conversely, riders returning from Boston, will be able to transfer to SCCRS trains at Providence in the evening.

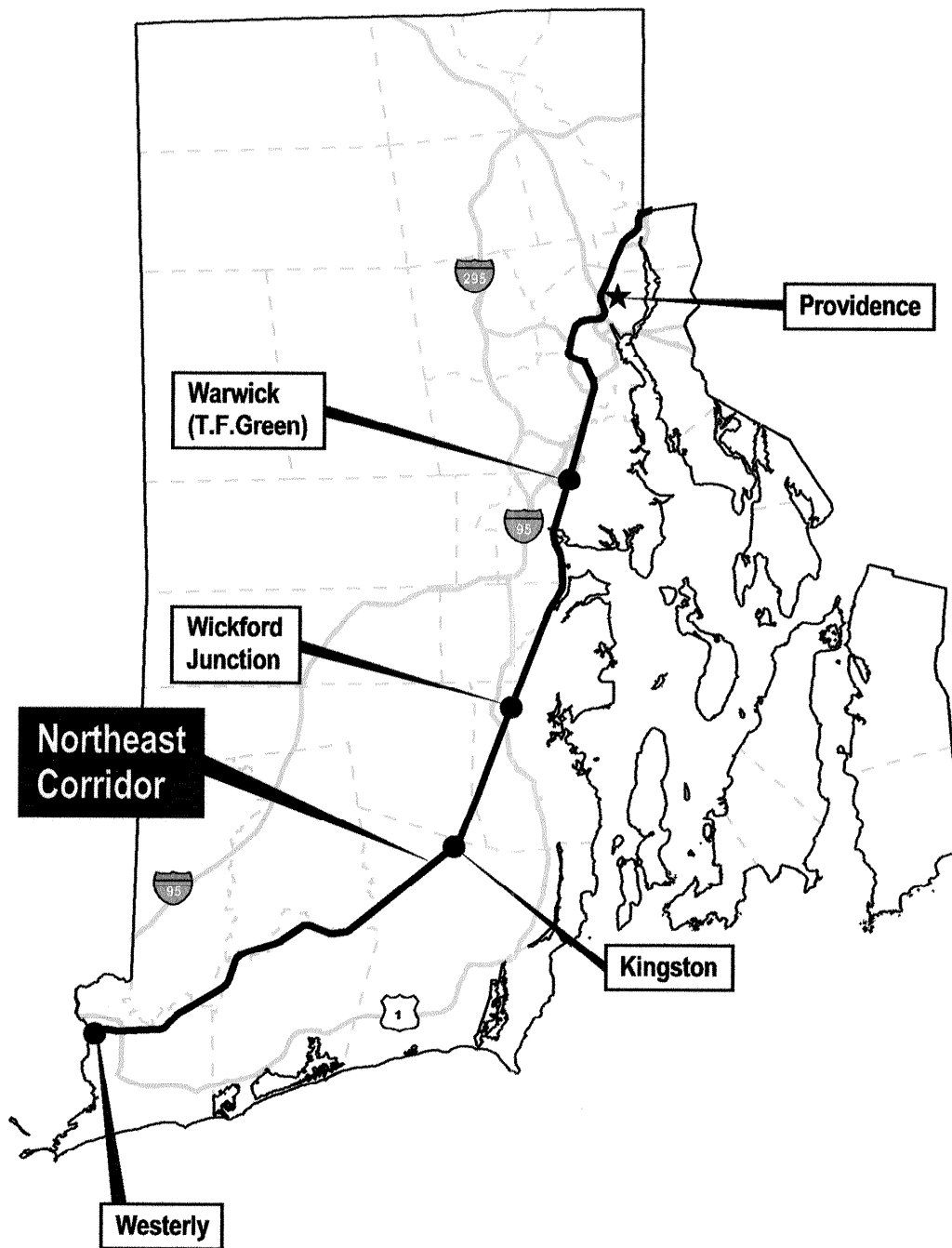
As with any commuter rail service, the ridership demand determines the rolling stock required, the facilities needed, and the number and frequencies of trains operated during the morning and evening peak periods. It is anticipated that the SCCRS will fit this pattern.

The total mileage between Providence and Westerly is 43.8 miles. The SCCRS will operate over Amtrak's Northeast Corridor that is a high speed, high capacity railroad (see Figure ES-1). The route consists entirely of double track and each track is signaled for operation in either direction. The maximum authorized track speeds (MAS) over the NEC currently range from 60 MPH to 150 MPH. The station at Providence consists of four tracks separated by two high-level platforms, approximately 1000 feet long.

The Freight Rail Improvement Project (FRIP) will ultimately provide a third track between Providence and Davisville, with a shared trackage portion of approximately 5 miles between south of Hillsgrove and north of the Davisville interlocking. This additional track will be used by the Providence and Worcester (P&W) Railroad to gain access to the deepwater port at Quonset Point. RIDOT will be investigating potential use of the FRIP track for commuter rail, including the shuttle service previously discussed. The FRIP will be designed so as not to preclude commuter use. Projected P&W trains have been incorporated into Amtrak's proposed service.

Based on a prior determination, the SCCRS will serve the following stations, located at NEC mileposts as shown below and on Figure ES-2:

- | | |
|-----------------------------|-------------------|
| • Providence Station | MP 185.1 |
| • Warwick Station | MP 176.6 |
| • East Greenwich Station | MP 171.9 (Future) |
| • Wickford Junction Station | MP 165.8 |
| • Kingston Station | MP 158.1 |
| • Westerly Station | MP 141.3 |










**Proposed Station Locations
South County Commuter Rail Service
Locus Map**

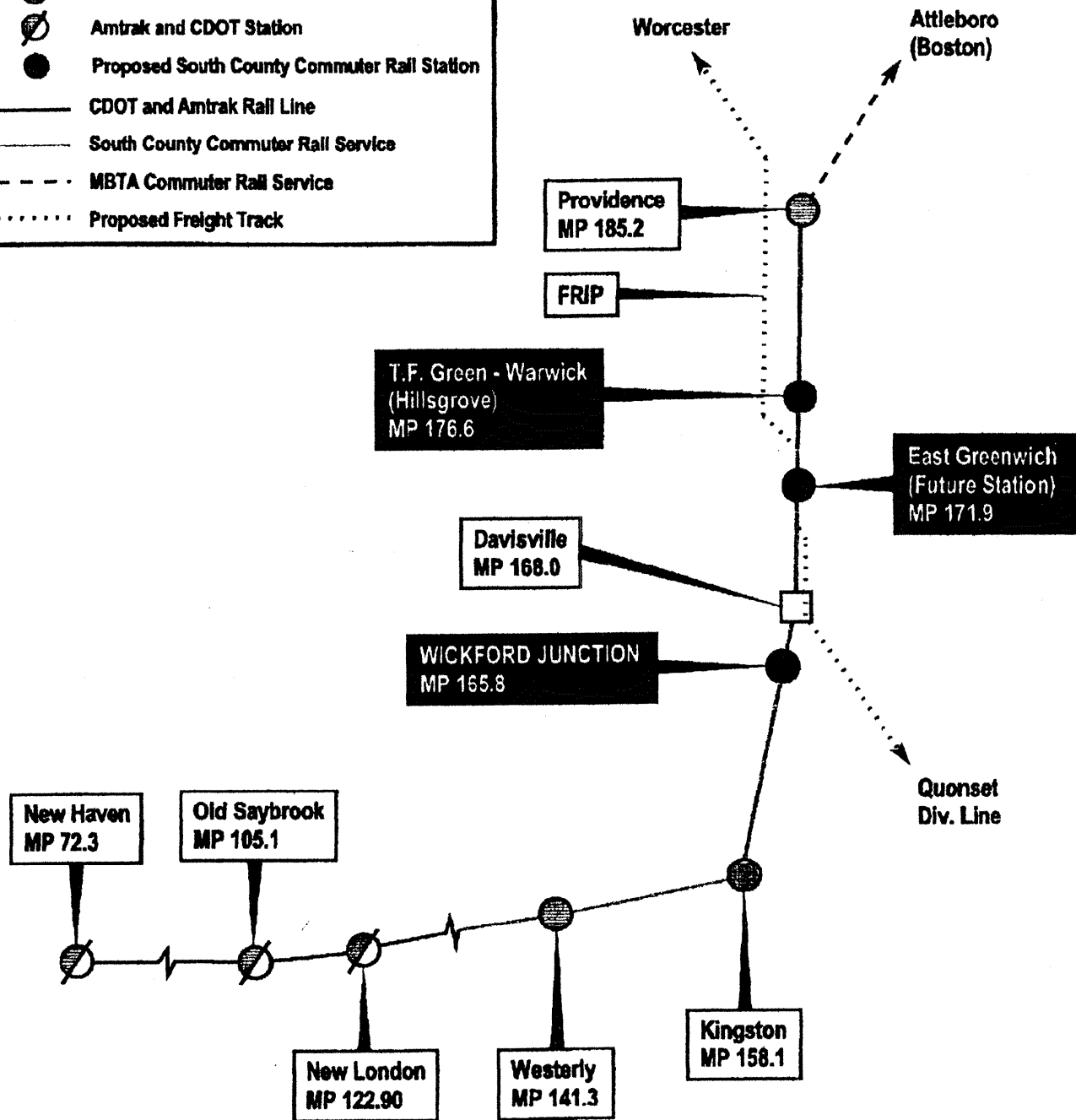
Approximate Scale: 1"= 7 Miles



Figure ES-1

Legend:

-  Amtrak Station
-  Amtrak and CDOT Station
-  Proposed South County Commuter Rail Station
-  CDOT and Amtrak Rail Line
-  South County Commuter Rail Service
-  MBTA Commuter Rail Service
-  Proposed Freight Track



Rhode Island South County Commuter Rail Service

Not to Scale

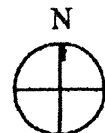


Figure ES-2

In order to be attractive to potential riders, the SCCRS must be fast and dependable. Every effort must be made to minimize trip time and reduce the potential for train delays caused by interference normally encountered when merging different classes of railroad services. Given these considerations, the following constraints and limitations are of concern in the planning process:

- **Amtrak Schedule**

The operations planning work described in this report used Amtrak proposed 34-train Acela schedule to develop a conceptual SCCRS operating plan. It must be emphasized that this operating plan is totally contingent on Amtrak's final operating plan, which is subject to additional refinement. Conflict resolution of the Amtrak 34-train proposed schedule is underway with the commuter railroads operating on the NEC (Metro-North, CDOT and MBTA). Since there is heavy competition between SCCRS trains and Amtrak trains during the evening peak period, any changes to Amtrak's operating plan are likely to necessitate revising the SCCRS operating plan.

- **MBTA and CDOT Schedules**

Considering that the SCCRS trains should connect with MBTA trains at Providence, another important factor is that future MBTA train schedules will have to change significantly to become fully coordinated with Amtrak's final operating plan. Any changes to either the Amtrak operating plan or the MBTA schedules will affect the operating plan of the SCCRS. The same situation applies to the CDOT Shore Line East service.

The methodology that was used to develop the preliminary operating plan for the SCCRS is typical of methods that are normally used for planning any new commuter rail start. The operations planning process involves reviewing the initial concepts, defining the system variables and then developing reasonable solutions to those interrelated factors which will ultimately govern the final operating plan. These critical elements are discussed below.

Facilities

Amtrak currently provides service to three stations on this portion of the NEC. These stations and their NEC milepost locations are as follows:

- Providence MP 185.1
- Kingston MP 158.1
- Westerly MP 141.3

The following three new stations are anticipated to serve the South County Commuter Rail Project:

- Warwick MP 176.6
- E. Greenwich MP 171.9 (Future)
- Wickford Jct. MP 165.8

RIDOT has held discussions with Amtrak to stop Acela trains at the Warwick Station because of its proximity to T.F. Green Airport. A Warwick intermodal station, to be utilized by Amtrak and the commuter service, is currently in the final design stage. The project has a \$25 million earmark under TEA 21 and includes an automated people mover connection to the Airport. The East Greenwich Station

is not a planned facility under the current SCCRS program. It could be a station site in the future. The Wickford Junction Station is the only new station facility to be funded under the proposed commuter service. Station descriptions, a layover facility, track, signal system and traction power are discussed below.

- **Providence (MP 185.1)**

With the exception of the additional signage necessary to make the public aware of the new service, the station facility at Providence should be adequate to support the SCCRS. Additional operational flexibility would allow the commuter trains to access the FRIP freight track. Connecting Tracks 3 and 5 to the FRIP track would permit commuter service to operate off Amtrak's Main Line to Warwick.

- **Warwick (MP 176.6)**

This station is expected to serve the T. F. Green Airport, which is currently one of the fastest growing airports in the country. Although Amtrak has indicated they will stop the Acela Regional trains at the new intermodal station, this station requires only a minimal configuration to serve the SCCRS. The commuter service only requires platforms, shelters and canopies. Amtrak requires a more elaborate station including a station building. The building would include ticketing, waiting area, and other amenities. The proposed intermodal station configuration being designed will incorporate all these components. This station, while anticipating commuter rail service, is being funded under another project and will proceed independent of this commuter service proposal.

- **East Greenwich (MP 171.9)**

Although this station is not being considered as part of the initial operating plan, it is being discussed here because, from a planning perspective, it is more economical to include it in the planning process at this time. The configuration for this station can be the same as for Wickford Junction. No additional station tracks or sidings will be required at this location. There are no capital costs allocated under the SCCRS Program.

- **Wickford Junction (MP 165.8)**

This station is expected to generate the highest ridership counts for the SCCRS. The same typical commuter rail configuration previously discussed will also be adequate to serve Wickford Junction. Although side platforms and a station siding (and two interlockings) were originally proposed for this location, the siding does not provide any operational benefits to the SCCRS Westerly service and costs have not been included in that option. If an incremental approach ending commuter service at Wickford is utilized, then an interlocking with a siding would be required. Capital costs for the additional siding work are included in Alternative 3A.

- **Kingston (MP 158.1)**

Kingston Station is currently serving Amtrak patrons. Extensive upgrades were completed in 1996 on the station and the parking facilities by RIDOT. A platform and a shelter on the westbound side have recently been constructed by Amtrak. There are plans to construct a pedestrian overpass for access between platforms.

- **Westerly (MP 141.3)**

Westerly Station has been serving Amtrak patrons and extensive upgrades have been completed by RIDOT in 1998 for the station and the parking facilities. Since Westerly is being considered as the final terminal for the SCCRS, it would be advantageous to consider a small passenger yard at this location. Ideally, the yard would be located at some point west of the station.

- **Support Yard (Layover Facility)**

A small support yard will be required for the cleaning, servicing and overnight storage of the trainsets to be used for the SCCRS. Preliminary indications are that between three and five trainsets will be required to initiate the SCCRS. Since Westerly is proposed to be the final terminal for the SCCRS, it is the most ideal location for the yard from an operations standpoint and to minimize deadheading. However a new layover yard is being designed in conjunction with the MBTA to handle MBTA trains operating on the Northeast Corridor into Providence. This yard (located in Pawtucket) is being designed to handle eight trainsets, providing adequate storage for the proposed commuter service trainsets. This yard would also be used for midday storage of Providence trains. Both configurations are estimated in the O&M cost section of this report.

- **Track**

As mentioned previously, Amtrak's NEC between Providence and Westerly, RI is a two track, high-speed railroad, capable of supporting much higher train densities than currently exist. Maximum authorized speeds (MAS) have been boosted to 150 MPH as part of Amtrak's High Speed Rail Project. Since the MAS for the SCCRS is not anticipated to require speeds higher than 80 MPH, the existing and proposed NEC track infrastructure will provide more than sufficient resources to operate the SCCRS without any further upgrades or enhancements.

- **Signal System**

The existing signal system currently in place on the NEC between Providence and Westerly will adequately support the operation of the SCCRS. No interlocking reconfigurations are necessary to support the SCCRS. If SCCRS trains can use the third track between Providence and Warwick, some interlocking modifications may be necessary at Atwells to permit SCCRS trains access between the station platforms at Providence and the FRIP track.

- **Electrification**

While it is common knowledge that a electrification system has been constructed to power all Amtrak trains, previous planning efforts have not addressed the use of the new traction power system for SCCRS trains. There are both advantages and disadvantages to using electric traction for the SCCRS. From an operational standpoint the use of electric traction for SCCRS trains would provide train performance advantages. However, it would also restrict SCCRS trains to the NEC and not allow them to use the FRIP track, a significant operational restriction. If the use of electric propulsion is to be considered, additional yard and station tracks (beyond Amtrak's plans) would have to be equipped with a catenary system at a significant cost. The operations planning work for this report uses diesel propulsion.

Service Alternatives

The service alternatives under consideration for the proposed SCCRS are as follows:

- Alternative 1 - an intrastate “stand-alone” service that connects via cross-platform to MBTA trains at Providence. Layover facilities at Pawtucket (Alternative 1A) and at Westerly (Alternative 1B) were considered.
- Alternative 2 - an eastward extension of the CDOT Shore Line East New Haven to New London service with a layover facility proposed in Westerly.
- Alternative 3 - an interstate extension of MBTA operations westward from Providence with a layover facility (under a separate program) in Pawtucket, R.I.
- Alternative 3A - As a result of recent discussions with the MBTA, a new alternative for incremental staged expansion of existing MBTA service to Warwick and Wickford Junction was evaluated and included in this Executive Summary. This service differs slightly from the other alternatives in that it will provide an eight train service rather than the five train service for the other options. The additional three trains were required to provide a reverse commute connection to the T.F. Green Airport. The airport flight rush hours differ slightly from traditional commuter rail rush hours, requiring additional trains to connect. A summary of this option is included in this Executive Summary.

In order to define conceptual planning for the SCCRS, the preliminary operating plan had to make certain assumptions concerning as to when and how the trains might operate. The following assumptions apply to the operating plan. The operating plan will have to be revised to reflect any changes in these assumptions.

- The SCCRS would be structured to provide peak period, peak direction service from Westerly to Providence during the mornings and from Providence to Westerly in the evenings.
- The SCCRS would be initially scheduled to meet MBTA trains to and from Boston. Cross platform transfers with 5-minute connections at Providence are desirable.
- The station stop at East Greenwich has been included in the plan for planning purposes only. The station will only be developed based on future need.
- Although the preliminary operating plan provides some general ideas as to how the SCCRS might operate, Amtrak is still instituting the final 34 train Acela schedule, with the associated impacts to MBTA and CDOT. In summary, the development of a final operating plan will ultimately depend on complete integration of Amtrak, MBTA, CDOT and SCCRS schedules. These integrated schedules will "blend" all train service and be free of operational conflicts between trains.

- **Equipment & Fleet Size**

Each of the service alternatives, except 3A, would provide five SCCRS trains for the morning commute from Westerly and five trains for the evening commute from Providence. Equipment (fleet size) varies by alternative and is discussed below. The initial concept provides for using standard diesel locomotives and trainsets consisting of either three or four bi-level coaches. For each trainset, the last car will be a cab car so as to enable the train to operate in "push-pull" service. The type of equipment to be used would be similar to that being used by the MBTA between Boston, MA and Providence. If electric propulsion is to be considered, an electric locomotive would replace the diesel locomotive. The coaches and the cab cars would be the same as for diesel service. No additional equipment should be necessary to operate off-peak and/or weekend service, but labor costs and all other aspects of running and maintaining the equipment would add a significant cost compared to peak-hour service.

In addition to the trainsets necessary to protect revenue service, one spare trainset is necessary to protect any "in service" failures, and cover normal car and locomotive maintenance margins. If the SCCRS can be integrated with either MBTA and/or CDOT commuter rail operations, it may be possible to eliminate the extra trainset mentioned above. If, however, the SCCRS is developed as a stand-alone system, the spare set will be required.

- **Ridership**

Ridership forecasts (prepared by Cambridge Systematics, Inc. in 1995) for the SCCRS stations were provided in the form of "Daily Boardings". The total daily boardings for the Year 2000 for proposed station stops between Westerly and Providence are projected as follows:

	<u>Year 2000</u>	<u>Year 2010</u>	<u>Year 2020</u>
• Westerly	268	285	306
• Kingston	1367	1455	1609
• Wickford Junction	2869	3053	3386
• Warwick	<u>454</u>	<u>483</u>	<u>529</u>
	4958	5276	5830

Year 2010 represents an approximate 6.4 percent increase in passenger activity over Year 2000. Year 2020 represents a growth factor of one percent per annum from 2010.

- **Trip Times**

The overall trip time between Providence and Westerly for an SCCRS train making all station stops (including East Greenwich) is 50 minutes in either direction. The 50-minute trip time for the 43.8 miles produces an average speed of 52.5 MPH, including the time for station stops. The 52.5 MPH average speed is significant because it is better than most other commuter rail systems currently operating in the United States and is therefore very competitive with highway travel from purely a time standpoint. Without the East Greenwich Station stop, the trip time will be slightly less than 50 minutes.

- **Current MBTA Operations**

The MBTA recently began operating 11 round trip trains between Providence and Boston during weekday service. The additional MBTA trips to and from Providence will result in more flexibility for connections with the SCCRS.

Equipment Needs

Railroad passenger service is proposed to use bi-level coaches, with seating on upper and lower levels accessed by stairs, and with limited seating and wheelchair tie-down locations at a mid-level position at platform level. This is standard per the neighboring Massachusetts Bay Transportation Authority design. Seating capacities are 185 passengers for a so-called "blind" trailer coach and 175 passengers for a "control" trailer coach. The latter provides operating controls in the end vestibule location for use in push-pull train operations.

It is assumed that the directional, commuter-oriented nature of this service will result in all passengers traveling inbound from Westerly to Providence in the A.M. returning from Providence outbound in the P.M. Therefore, the vehicle requirements are based on accommodating the daily one-way ridership.

An accurate projection of the number of seats is critical because having more seats than required drives up the cost for coaches, and having too few seats will result in standee conditions. A review of MBTA train audits, plus inputting the time of travel and departure and arrival times for the proposed service, resulted in an estimate of the ridership demand for each of 5 peak period trains. For the year 2000 each peak directional period, the total of approximately 2,500 boardings are projected to be 10% for the first train, 20% each for the second, fourth and fifth trains, and 30% for the third train.

For the purposes of this operational analysis, it has been assumed that the total one-way directional ridership will be split among five trains as follows, yielding the accompanying passenger loads:

<u>Train Ridership Allocation</u>		<u>Year 2000</u> <u>Passengers</u>	<u>Year 2020</u> <u>Passengers</u>
First train	10%	248	292
Second train	20%	496	583
Third train	30%	744	874
Fourth train	20%	496	583
Fifth train	<u>20%</u>	<u>496</u>	<u>583</u>
TOTALS	100%	2480	2915

Daily Equipment Requirements	Blind Coaches	Control Coaches	Locomotives
Alt. 1A - Year 2000	9	4	4
Alt. 1A - Year 2020	10	4	4
Alt. 1B - Year 2000	9	4	4
Alt. 1B - Year 2020	10	4	4
Alt. 2 - Year 2000	12	6	6
Alt. 2 - Year 2020	14	6	6
Alt. 3 - Year 2000	11	1	2
Alt. 3 - Year 2020	13	1	2
Alt. 3A - Year 2000	5	1	1
Alt. 3A - Year 2020	6	1	1

Financial Analysis

The development of the financial analysis and funding plan began with an examination of current economic and transportation funding trends in Rhode Island. Unfortunately, the upward trends in the economy have not translated to additional state funding sources for transportation projects, as there has been a general trend towards tax reduction. Rhode Island's main sources of transportation funds are gas tax revenues, bond proceeds covered by gas tax revenues, restricted receipts, and federal funds. Even though the state is moving towards a dedicated source for transportation funds (gas tax revenues), the state has had to rely heavily on federal funds. The percent of federal funds is on a downward trend, with approximately 56% of the FY 2002 transportation budget comprised of federal funds. This percentage is down from previous years when federal funds have totaled between 60 and 65%. To provide a local match to these federal funds, the state has issued bonds every other year creating an additional strain on gas tax revenues to repay debt. Capital debt service amounted to about 13% of the total transportation budget in 1999.

The next step in developing the financial analysis and plan was to examine innovative ways to use current sources and new opportunities for revenues. To implement the SCCRS, RIDOT will need to finance the project using current funds and/or debt, and identify funding sources to cover the capital costs as well as O&M costs. The federal government typically provides funding opportunities for capital costs, but not for O&M costs. The percentage of federal funds that will be available for this project is not known, but for this analysis 33% federal funding was assumed based on recent nationwide trends.

Table ES-1
Capital and Operating & Maintenance Costs (Year 2000 \$)

Expenditures	1A	1B	2	3	3A
TOTAL ANNUAL OPERATING COSTS	\$7,263,142	\$6,434,058	\$6,009,277	\$8,001,677	\$2,913,431
TOTAL CAPITAL COSTS	\$59,300,000	\$64,900,000	\$81,800,000	\$50,500,000	\$31,131,740
Option 1A: Stand-Alone Service in Rhode Island (Pawtucket Layover) Option 1B: Stand-Alone Service in Rhode Island (Westerly Layover) Option 2: CONNDOT Service Extension to Providence Option 3: MBTA Service Extension to Westerly Option 3A: MBTA Incremental Service Extension to Warwick/Wickford					

The real crux of the funding for this project is paying for the ongoing costs of O&M and debt service. Operating revenues, which include passenger fares, a proposed \$1.00 parking fee at station parking lots, and advertising are initially anticipated to cover only about 35-40% of total annual expenses (O&M and debt payments) for all the alternatives, and will not likely reach 100% within the foreseeable future. Therefore additional transportation funding is needed to implement this project. As proposed in the FY 2002 budget, the gas tax will become a dedicated transportation fund source as early as 2003. When this occurs, a portion (or a dedicated total) of the gas tax revenue could be diverted to SCCRS to cover the operating costs. Other funding sources are discussed in Section 4.0.

A funding plan has been developed which includes a combination of federal funds and debt financing to pay for capital costs while operating revenues and some type of state assistance (e.g., gas tax, etc) to cover debt service and O&M costs for all the alternatives. The following table details the capital costs for the project.

Table ES-2
SCCRS Uses and Sources for Capital Investments (Year 2000 \$)

Item	Alt. 1A	Alt. 1B	Alt. 2	Alt. 3	Alt. 3A
Sources	\$57.8 M	\$63.2 M	\$79.5 M	\$49.1 M	\$30.0 M
Federal Grants (33%)	\$19.6M	\$21.4 M	\$27.0 M	\$16.7 M	\$10.3 M
State Bond Issue Proceeds	\$38.2 M	\$41.8 M	\$52.5M	\$32.4 M	\$19.8 M
Uses	\$57.8M	\$63.2 M	\$79.5 M	\$49.1 M	\$31.5 M
Capital Costs	\$59.3 M	\$64.9 M	\$81.8 M	\$50.5 M	\$31.1 M
Financing Fees	\$0.7 M	0.8 M	\$1.0M	\$0.6 M	\$0.4 M

The financial analysis included the development of a *pro forma* income statement and cash flow projection using 2000 dollars for a twenty-seven year period with one year of construction and twenty-six years of operation. To cover the capital costs, the state should try to get the SCCRS earmarked as a "New Start" project to obtain the greatest amount of federal funds. This analysis further supported the need for an ongoing source of income to support the project's debt service and O&M costs as all alternatives have a negative net income without some state assistance. Based on the financial model, the state will need to provide anywhere from \$5.7 to \$6.5 million dollars a year (depending on the chosen full service alternative) to pay for debt

service and O&M costs not covered by operating revenues. Supplemental state funding for the less ambitious Alternative 3A would still require at least \$4 million per year. These amounts could be covered by a penny to 1.5 cents of the current 28 cents gas tax (or the current tax could be increased by up to 1.5 cents), as 1 cent of gas tax generates approximately \$4.5 million dollars. Or, the state could increase the sales tax by one-tenth of one percent to cover these expenses.

At this point in the project development, the options with the lower capital and O&M costs will likely fare the best. Comparison mechanisms such as a farebox recovery ratio and project rate of return did not yield major differences between the alternatives.

Economic Evaluation

An economic impact assessment and a project economic evaluation were conducted. The former considers the effects of construction and investment, as well as ongoing operations, on the local economy, whereas the latter is used to determine if the overall social benefits to be realized from a project investment warrant the associated costs. These evaluations may include multiple qualitative and quantitative parts, together serving as inputs to the decision process rather than as a decision determinant.

Three operating alternatives — stand-alone service, ConnDOT service extension and MBTA service extension — were evaluated, including two options for the location of an overnight layover facility associated with stand-alone service. Results for each alternative vary with their capital investment and operating characteristics. Additional analysis was conducted to estimate how alternative 3A — the less ambitious MBTA incremental service extension — differed from the other relatively similar alternatives.

Gross economic impacts to the State of Rhode Island as a result of construction and on-going operations of the proposed project are significant. State-wide gross impacts due to in-state station construction and vehicle assembly expenditures would range from \$36 to \$51 million in total output or economic activity, generating anywhere from 450 to 610 person-year jobs with earnings from \$11 to \$16 million, depending on the alternative, excepting Alternative 3A. Alternative 3A would be expected to generate in the range of \$31 M total output, 375 person-years, with \$9 M earnings). However, the net economic impacts -- those attributable to fund originating outside of the local economy, in this case federal funding -- tell a better story of the true economic picture of investing in commuter rail. Without this project, local funding may be spent in some other way which still creates economic benefits. Since federal funding amounts to about one-third of the project cost, the true economic benefits are at least one-third of the gross amounts indicated above under the assumption that the federal funding would not be injected into the local economy without the project.

Ongoing operations and maintenance (O&M) activities also generate economic impacts. The gross multiplied effects of expenditures on O&M result in \$8 to \$11 million in additional output or economic activity, generating from 75 to 100 person-year jobs with earnings in the range of \$2.5 to \$3.2 million, depending on the alternative. The figures for Alternative 3A suggest about \$3.1 M in total output, 37 person-year jobs with earnings of \$1.2 M. However, the share of funds used for O&M that originates from out-of-state is expected to be very small, in the neighborhood of 3%. So the net impacts, and thus the true benefits to the local economy are likely to be substantially less than the gross O&M impacts indicated above.

In order to help evaluate the project's economic feasibility from a benefit-cost perspective, the user and related economic benefits of travel time savings, accident reduction benefits, vehicle operating cost savings and emissions reductions attributable to the SCCRS were quantified. These were then compared to capital and ongoing O&M costs to calculate benefit-cost ratios, net present values, and economic rates of return for

each of the operating alternatives. These economic evaluation measures indicate that none of the proposed operating alternatives would be economically feasible strictly on the merits of those benefits which were quantified. However, the proposed project may offer many non-quantifiable benefits that are not easily captured by the analyses summarized above. These benefits include the provision of an additional transportation mode choice, support of regional land use goals, economic development opportunities, generation of positive economic activity, and more efficient utilization of existing transportation infrastructure.

Potential Operators

Currently, some 20 commuter rail operations exist in 16 cities in the United States and Canada. State or local authorities own nearly all of these operations. The older systems tend to be the largest and are usually public owned and operated by public agencies. The newer start-up systems tend to be operated by third-party contractors. All 16 operations are operated on the account of state or local authorities using publicly owned rolling stock dedicated to the commuter operation. Physical plant infrastructure may be held by public agencies or can be owned by private rail companies. Some systems operate a portion of their service on rights-of-way belonging to other rail carriers. Several agencies operate services on portions of Amtrak's Northeast Corridor.

There are five active commuter rail contract operators in the United States. Three of these five contractors are Class I private freight carriers operating over their own lines. One operator, Amtrak, is the national intercity passenger rail carrier. The remaining contractor, Herzog, is the only private operator that has no other rail freight or passenger operations base. The predominance of Amtrak as the sole rail passenger service operator in the eastern New England region can not be ignored in anticipating the ultimate selection of an operator for the proposed service. In addition, Alternatives 2, 3, and 3A will force RIDOT to use the operator currently operating the CDOT or MBTA service, Amtrak in both cases. As owner of the trackage involved, Amtrak concerns with regards to the capabilities and past performance of the potential operators will have to be satisfied as well.

Prior to commencing the process of securing the services of an operator, either by individual negotiation or formal requests for proposal, an outline of the proposed contract should be finalized. This should address the various performance parameters that will guide the operator in preparing a service plan and the associated cost proposal.

A service contract to operate the SCCRS should be structured to address the following key areas:

- Basic Service Requirements
- Services and Goals
- Administrative Processes
- Rights of Agency
- Cost and Budget Definition
- Compensation

Rhode Island Public Transit Authority (RIPTA) Impacts and Service Planning

As part of the overall service planning for commuter rail operation between Westerly and Providence, Rhode Island, existing public transit service operations provided by the Rhode Island Public Transit Authority (RIPTA) were examined. For the purposes of this commuter rail project, only those RIPTA routes which operate in the region encompassed by the proposed passenger rail service were examined.

RIPTA presently operates limited weekday service (one trip each way) between Westerly (Amtrak train station) and Providence (Kennedy Plaza) as a commuter express/park-ride operation for morning and evening rush hours. RIPTA also provides a more extensive line haul bus service between Providence and Wickford, University of Rhode Island/Kingston and Warwick/East Greenwich.

Ridership forecasts for the proposed SCCRS presupposed a commuter rail service operating between Westerly and Providence with limited bus service remaining in the area. Given the redundancies in service areas, some of these bus services were assumed to be modified in the alternatives analysis to favor commuter rail. For the proposed commuter rail operating plan, the ridership estimates prepared in 1995 assumed that RIPTA's Providence-Westerly express service would be eliminated. It was also assumed that all service between Providence and URI/Kingston would be eliminated and replaced with enhanced local feeder bus service oriented to the Kingston train station. The decision to eliminate the URI/Kingston service was made without benefit of the more detailed commuter rail operating schedules now available. Given the fact that the commuter rail service will be oriented towards Providence in the morning, with only one A.M. outbound trip, it is believed that RIPTA service on this route should be retained to accommodate outbound A.M. trips to (and inbound P.M. from) the URI campus.

Extensive local bus service is operated by RIPTA in the areas immediately south of Providence (Cranston and Warwick) which provides local transit riders with multiple routes into downtown Providence. Given the extensive local service coverage provided by existing RIPTA service south of Providence, it was assumed that this service would remain unchanged since it provides a higher level of transit service than would commuter rail for many of the trip origins from this area.

Elimination of Westerly commuter express service would produce an estimated daily net savings of approximately \$95 (costs of \$160 less revenue of \$65) based on the previous zone fare arrangement. Vehicle and operator requirements for the adjusted feeder routes (Routes 12, 14 and 66) should remain unchanged. The overall impact to RIPTA is negligible, and should be offset by gains in feeder bus service to the proposed train stations.

Labor Protection Obligations

As a component of the development of an overall operations plan for the proposed commuter rail operations between Providence and Westerly, impacts to labor protection and existing mass transit were examined. The three operating scenarios do not differ in station location or ridership. Therefore, any impacts to existing mass transit systems and/or their employees will be identical.

Labor protection provisions are commonly referred to as 13c issues. It should be noted that these protections are only applicable when grants are received from FTA. FTA requires that a grantee meet the requirements of Section 5333(b) of the Federal Transit Law. The section requires a grantee to protect mass transit employees from impacts to certain rights caused by the use of federal funds for the "acquisition, improvement, or operation of a transit system". While FTA administers the grant money, they request the

Department of Labor (DOL) to enforce and sign-off on the applicable labor protection requirements of the grant. No grant can be made without DOL sign-off.

Protection for existing carriers affected by federally-funded projects is less clear than those for labor. No defined requirements for compensation to an affected private carrier are evident in the Federal requirements. Within the proposed commuter rail service area only two existing mass transit providers compete directly for the same rider market. These are the Bonanza Bus Lines and the Rhode Island Public Transit Authority (RIPTA).

The institution of commuter rail service would present negligible impacts to RIPTA. Coordinated planning of bus routes with the proposed stations should enhance RIPTA's ability to provide service within the project area and avert any loss of positions. Bonanza presents a slightly different circumstance. It is a private bus company operating interstate service, most of which is outside of the proposed commuter rail service area. However, the existing route segment between T.F. Green Airport and Providence would compete directly with the proposed commuter rail system.

Potential impacts to an existing mass transit carrier are characterized by a loss of ridership, directly attributable to the proposed commuter service and with an associated financial effect and impact to their labor force. Initial discussions were held with Bonanza Bus Lines. Subsequently Bonanza was purchased by Coach USA of Houston, Texas. Coach USA has indicated that they consider the proposed commuter service to be an impact to their bus service. Based on present bus schedules the only impact from rail service would be to the Providence to T.F. Green route. It can also reasonably be argued that even this impact should be restricted to riders originating at Providence. Riders originating from outside Providence will not change modes at Providence, but will continue on the bus to T.F. Green.

It is highly unlikely that the Providence/T.F. Green bus route would be eliminated due to rail service. At worst, under the most competitive rail scenario, only local riders originating or destined for Providence should be impacted. Most likely, rail ridership to the airport will come from single-occupant automobiles. This should produce an overall increase in the transit market, rather than rail taking a portion of the bus ridership in a fixed market.

Conclusion

The three basic alternatives considered in the report were arranged to provide the same level of passenger service within the Providence to Westerly corridor. The mechanics needed to achieve this level of service differed between the options. Recently an alternative providing an incremental approach to Alternative 3 has been progressed. The service alternatives under consideration for the proposed SCCRS are as follows:

- Alternative 1 - an intrastate "stand-alone" service that connects via cross-platform to MBTA trains at Providence. Layover facilities at Pawtucket (Alternative 1A) and at Westerly (Alternative 1B) were considered. This service provides five train peak-period service over the full corridor. This service would be managed by RIDOT (or equivalent agency) and the train service would be contracted out to an operator. This alternative would only have to coordinate with Amtrak, eliminating interferences with MBTA or CDOT existing schedules. However, because it is independent, it will not share in the equipment and operation efficiencies present in the existing systems for MBTA or CDOT. It also requires Rhode Island to establish a comprehensive management structure to monitor the service and its operator.

- Alternative 2 - an eastward extension of the CDOT Shore Line East New Haven to New London service with a layover facility proposed in Westerly. This service provides five train peak-period service over the full corridor. Although the system will operate, the market for CDOT is south to New Haven and eventually New York, while RIDOT wants to go north to Providence. This difference forces the layover facility to be in Westerly so trains can operate in both directions in the morning, and requires the mid-day layover at Pawtucket as well. The alternative does take advantage of the equipment and operational efficiencies in the existing Shore Line East service. It would require RIDOT to negotiate an operating agreement with CDOT, similar to the existing Pilgrim Partnership with MBTA.
- Alternative 3 - an interstate extension of MBTA operations westward from Providence with a layover facility (under a separate program) in Pawtucket, R.I. This service provides five train peak-period service over the full corridor. This alternative takes advantage of the MBTA's existing operations north in the morning and south in the evening, matching the Rhode Island commuter pattern. The disadvantage is the Attleboro Line is very heavily traveled and Rhode Island commuters only add to that crunch if they travel north of Providence. As an advantage, RIDOT already has an established arrangement with the MBTA operating trains into Providence, and political agreement to pursue service further south to Warwick and Wickford. The new layover at Pawtucket lends some added benefit to the equipment and operational efficiencies already present with the MBTA service into Providence.
- Alternative 3A - As a result of recent discussions with the MBTA, a new alternative for incremental staged expansion of existing MBTA service to Warwick and Wickford Junction was evaluated. This service differs slightly from the other alternatives in that it will provide an eight train service rather than the five train service for the other options. The additional three trains were required to provide a reverse commute connection to the T.F. Green Airport. The airport flight rush hours differ slightly from traditional commuter rail rush hours, requiring additional trains to connect. This alternative resulted from the RIDOT/MBTA discussions for service to the new Warwick Station at the T.F. Green Airport. The Warwick Station will be built independent of the SCCRS and Amtrak has already committed to stopping their Acela Regional trains there. This alternative takes advantage of the existing investment in the Pawtucket Layover and the Warwick Station, and will garner approximately 70% of the total SCCRS projected ridership.

The major points of each alternative have been discussed above. Financial and economic issues such as capital and operations and maintenance costs are also a critical component in the decision process. The major financial elements are shown in the table below.

SCCRS Major Financial and Economic Elements

Alternative	Capital Cost	Annual O&M Cost	Total Funding	Annual RI Assistance	RI Gross Output	Benefit Cost Ratio
1A	\$59.3 M	\$7.3 M	\$57.8 M	\$6.2 M	\$38 M	0.76
1B	\$64.9 M	\$6.4 M	\$63.2 M	\$5.8M	\$49 M	0.79
2	\$81.8 M	\$6.0 M	\$79.5 M	\$6.1 M	\$51 M	0.72
3	\$50.5 M	\$8.0 M	\$49.1 M	\$6.5 M	\$36 M	0.80
3A*	\$31.1 M	\$2.9 M	\$30.0 M	\$3.0 M	\$29 M	±1.0

- * Costs shown are based on current negotiations with the MBTA and preliminary analysis of financial and economic factors

Based on the review and analysis performed the following alternative is recommended for service over the full corridor:

- Alternative 3 - Showing the highest Benefit-Cost Ratio, although the annual O&M is slightly higher than other options, it also is the best fit for the Rhode Island commuter. Existing operating agreement, investment in the Pawtucket Layover, and other connections create an added advantage.

However, the best Benefit-Cost Ratio is Alternative 3A. This alternative only covers the first 20 miles of the corridor, but garners 70% of the total ridership at 60% of the capital cost and only 45% of the annual O&M cost. Additionally, those costs cover an eight train service versus a five train service for the other alternatives and provides a reverse commute connection to T.F. Green Airport as well. This option provides RIDOT with the best bang for their buck and, due to the existing Pilgrim Partnership Agreement, should be able to get on-line quicker than the other options.

SECTION 1.0 OPERATIONS PLAN

1.1 Operational Overview

The conceptual plan for the South County Commuter Rail Service (SCCRS) as originally proposed is to operate peak-period service from Westerly to Providence, RI in the morning and return during the evening. It is fully anticipated that SCCRCS riders who desire to continue to Boston, MA will be able to do so by simply stepping across the platform at Providence and boarding an MBTA train. Conversely, riders returning from Boston, will be able to transfer to SCCRCS trains at Providence in the evening.

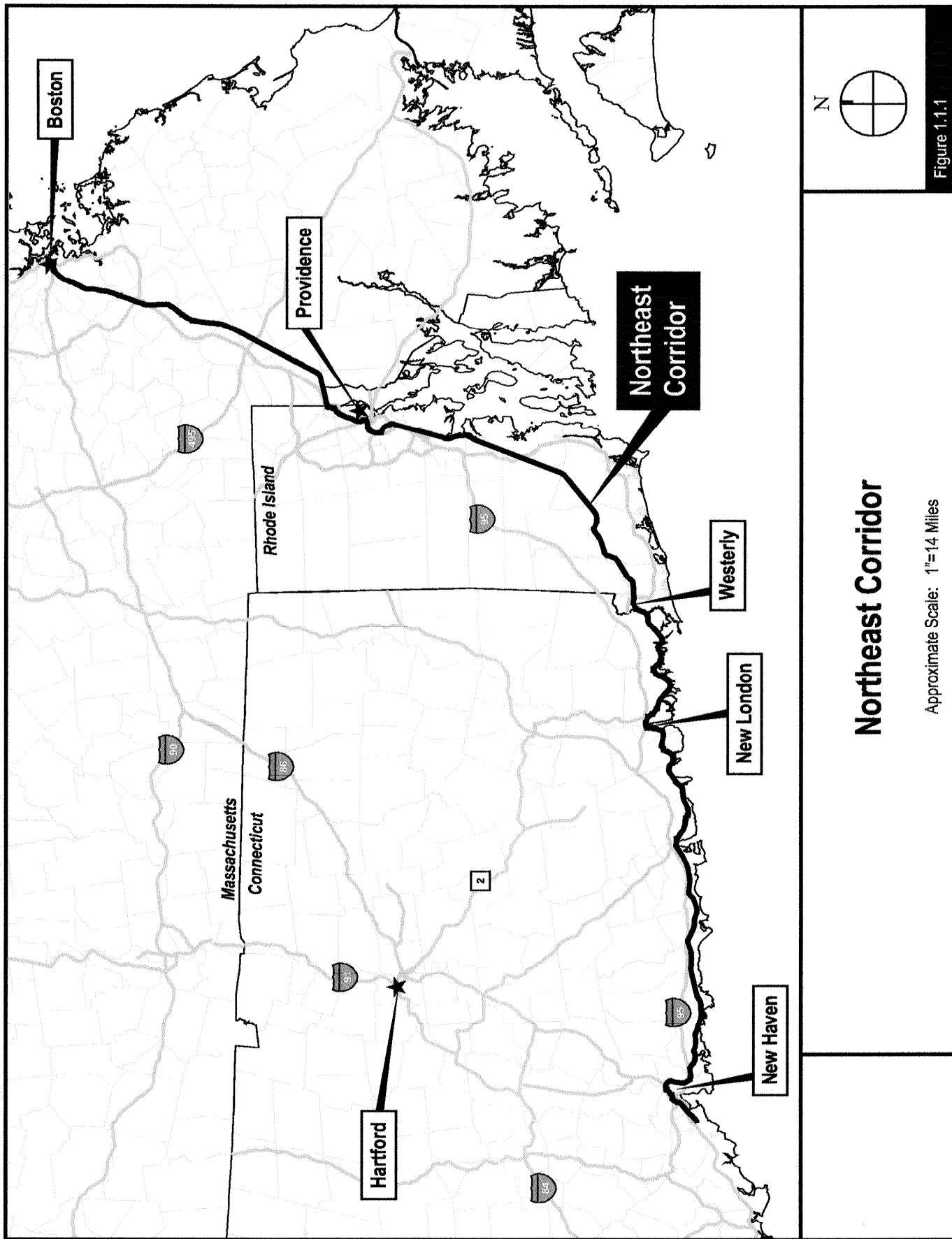
As with any commuter rail service, the rolling stock required and the facilities needed are driven by the number and frequencies of trains operated during the morning and evening peak periods. The number of trains required is normally driven by the ridership demand and is anticipated that the SCCRCS will fit this pattern. The operation of off-peak midday and late night train service is not normally driven by ridership demand. Off-peak service is usually a matter of policy as dictated by the operating agency. The added costs for operating off-peak midday and late night train service can be measured and quantified in order to assist RIDOT with the decision as to whether or not to provide such service.

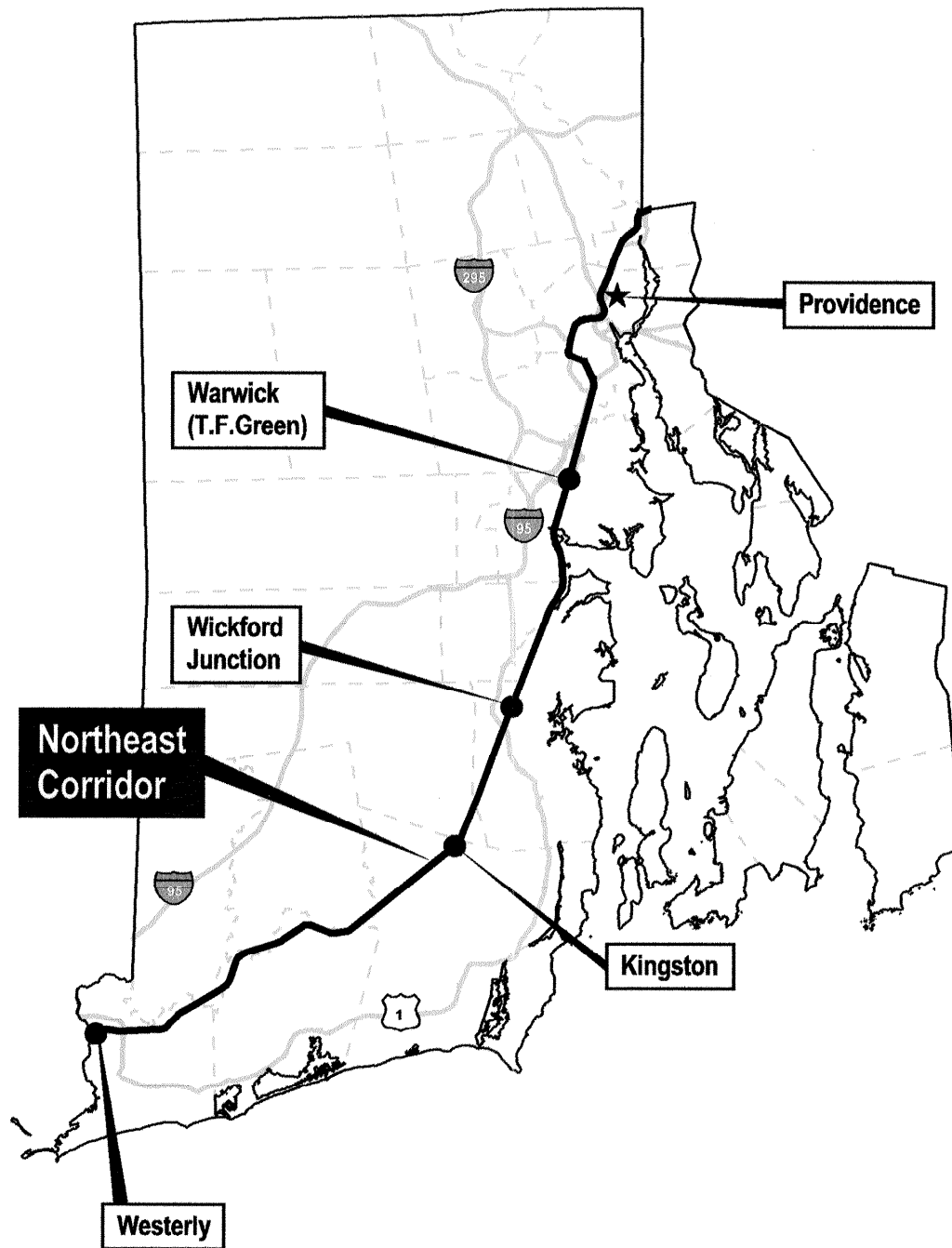
The total mileage between Providence and Westerly is 43.8 miles. The SCCRCS will operate over Amtrak's Northeast Corridor that is a high speed, high capacity railroad (see Figure 1.1.1 and 1.1.2). The route consists entirely of double track and each track is signaled for operation in either direction. The maximum authorized track speeds (MAS) over the NEC currently range from 60 MPH to 110 MPH. Amtrak plans to boost the MAS to 150 MPH in areas where feasible. The station at Providence consists of four tracks separated by two high-level platforms, approximately 1000 feet long.

The Freight Rail Improvement Project (FRIP) will ultimately provide a third track between Providence and Davisville, with a shared trackage portion of approximately 5 miles between south of Hillsgrove and north of the Davisville interlocking. This additional track will be used by the Providence and Worcester (P&W) Railroad to gain access to the deepwater port at Quonset Point. RIDOT will be investigating potential use of the FRIP track for commuter rail. The FRIP will be designed so as not to preclude commuter use. Projected P&W trains have been incorporated into Amtrak's proposed service, however freight trains do not follow schedules as exactly as passenger trains. This makes schedule conflict resolution a moving target.

Based on a prior determination, the SCCRCS will serve the following stations, located at NEC mileposts as shown below and on Figure 1.1.3:

- | | |
|-----------------------------|----------|
| • Providence Station | MP 185.1 |
| • Warwick Station | MP 176.6 |
| • Wickford Junction Station | MP 165.8 |
| • Kingston Station | MP 158.1 |
| • Westerly Station | MP 141.3 |





**Proposed Station Locations
South County Commuter Rail Service
Locus Map**

Approximate Scale: 1"= 7 Miles

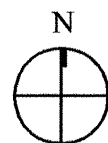







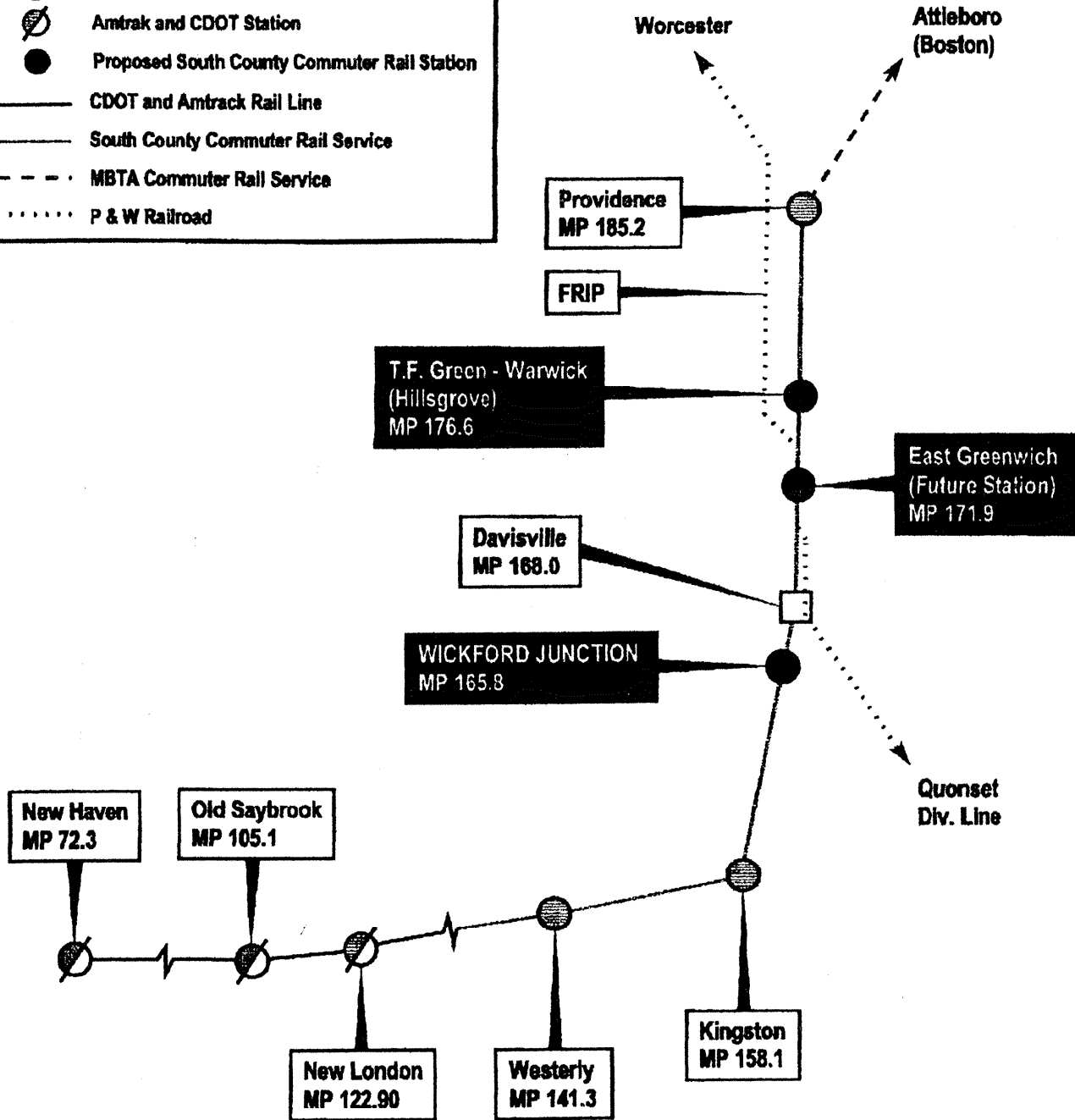


Figure 1.1.2

Legend:

-  Amtrak Station
-  Amtrak and CDOT Station
-  Proposed South County Commuter Rail Station
-  CDOT and Amtrack Rail Line
-  South County Commuter Rail Service
-  MBTA Commuter Rail Service
-  P & W Railroad



Rhode Island South County Commuter Rail Service

Not to Scale



Figure 1.1.3

There are a total of five universal interlockings between Providence and Westerly:

- Atwells MP 184.2
- Cranston MP 181.2
- Davisville MP 168.0
- Kingston MP 158.8
- High Street MP 142.9

These interlockings provide the capability to divert trains from one track to the other. The Amtrak "Corridor" Train Dispatcher located in the Boston CETC Center controls the routes through these five interlockings. Under the FRIP, several additional crossovers will be constructed connecting the FRIP track to the NEC.

Constraints/Limitations

In order to be attractive to potential riders, the SCCRS must be fast and dependable. Every effort must be made to minimize trip time and reduce the potential for train delays caused by interference normally encountered when merging different classes of railroad services. Given these considerations, the following constraints and limitations are of concern in the planning process:

- **Amtrak Schedule**

The operations planning work described in this report used an Amtrak 34-train schedule to develop a conceptual SCCRS operating plan. It must be emphasized that this operating plan is totally contingent on Amtrak's proposed operating plan, which is subject to additional refinement. Conflict resolution of the Amtrak 34-train proposed schedule is underway with the commuter railroads operating on the NEC (Metro-North, CDOT and MBTA), but not yet complete. Since there is heavy competition between SCCRS trains and Amtrak trains during the evening peak period, any changes to Amtrak's operating plan are likely to necessitate revising the SCCRS operating plan.

- **MBTA and CDOT Schedules**

Considering that the SCCRS trains should connect with MBTA trains at Providence, another important factor is that future MBTA train schedules have not yet been developed at the time of this report. Preliminary indications are that the MBTA schedules will have to change significantly to become fully coordinated with Amtrak's final operating plan. Any changes to either the Amtrak operating plan or the MBTA schedules will affect the operating plan of the SCCRS. The same situation applies to the CDOT Shore Line East service.

Methodology

The methodology that was used to develop the preliminary operating plan for the SCCRS is typical of methods that are normally used for planning any new commuter rail start. The operations planning process involves reviewing the initial concepts, defining the system variables and then developing reasonable solutions to those interrelated factors which will ultimately govern the final operating plan. This is often an iterative process, using a step by step procedure that involves an interrelationship between the following discreet activities:

- Identify and define a proposed route to include locating the end terminals and intermediate stations

- Determine the type of equipment (rolling stock) to be operated over the route
- Determine whether the route is currently suitable for passenger service, and perform conceptual engineering to determine the level of ultimate operating capability. (maximum track and curve speeds, grades, interlockings, etc)
- Develop peak hour ridership figures for each station and post process into train loading counts
- Use ridership demand, equipment and operating constraints to determine what level of service is required (frequency)
- Develop conflict-free train schedules and corresponding stringline graphs that integrate the proposed SCCRS with proposed Amtrak and MBTA service
- Use resultant stringline diagrams to determine what facility improvements are required (signals, interlockings, track, controlled sidings, station facilities, storage yards, etc.)
- Develop a preliminary operating plan by integrating the proposed SCCRS into planned Amtrak, and MBTA services over the entire route to Boston
- Determine the number of trainsets required (fleet size) to support peak period service as defined by the preliminary operating plan
- Estimate capital, operating and maintenance costs using information derived from the preliminary operating plan

Many of the above activities are interdependent. If one variable is modified, it is often necessary to revisit the operating plan and recalculate for updated results. RIDOT's study of a commuter rail service has been ongoing for several years. Many preliminary components of this planning effort have been completed previously and are incorporated into this report.

One of the primary challenges to the development of an operations plan for the SCCRS is the coordination with the Amtrak proposed "34-Train Timetable" which was supplied for use for planning the new service. Amtrak also provided their TPC runs for the SCCRS trains planned to operate between Providence and Westerly, RI. These TPC runs form the basis for developing the stringline graphs for the SCCRS that are used as part of the operating plan.

The existing MBTA operation between Providence and Boston was initially considered as an integral part of this analysis, however it was quickly determined that the existing MBTA operation has yet to be coordinated with Amtrak's 34-Train Timetable. It is certain that future MBTA train schedules to and from Providence will require coordination with both Amtrak and SCCRS service. This will be a critical factor during the evening peak period.

Since the operating plan developed for this report is preliminary, it only addresses peak period operations (6:30 A.M. to 8:30 A.M. and 5:15 P.M. to 7:30 P.M.). It is during the morning and evening peak periods when the greatest number of trains are required. Ultimately, peak period weekday train density is a major factor in determining what facilities are necessary to support train operations. Peak period operations and ridership volumes are also the major factors in determining the fleet size required to support the operation.

A complete 18 hour operating plan for weekdays and a weekend operating plan can easily be developed after RIDOT has had the opportunity to review preliminary findings and decide if there is a market for off-peak midday, late night and weekend train service.

1.2 Facilities Overview

The South County Commuter Rail Service will operate over 43.8 miles of Amtrak's Northeast Corridor (NEC) between Providence and Westerly, RI. The route is currently comprised of two tracks with current maximum authorized speeds (MAS) of up to 150 MPH. There are 5 universal interlockings between Providence and Westerly. These interlockings provide the capability to route trains in either direction on either track.

Three of the 5 interlockings provide the capability to divert trains from one track to the other at 80 MPH. The other 2 interlockings provide for 45 MPH diversion speeds.

A list of interlockings along with their location and diversion speeds are as follows:

- | | | |
|---------------|----------|--------|
| • Atwells | MP 184.2 | 45 MPH |
| • Cranston | MP 181.2 | 45 MPH |
| • Davisville | MP 168.0 | 80 MPH |
| • Kingston | MP 158.8 | 80 MPH |
| • High Street | MP 142.9 | 80 MPH |

There are currently no existing sidings which would be useful for commuter rail trains to "clear" the two main tracks and enable an Amtrak HSR or NED train to "overtake" the SCCRS trains.

Amtrak currently provides service to three stations on this portion of the NEC. These stations and their NEC milepost locations are as follows:

- | | |
|--------------|----------|
| • Providence | MP 185.1 |
| • Kingston | MP 158.1 |
| • Westerly | MP 141.3 |

The following three new stations are anticipated to serve the South County Commuter Rail Project:

- | | |
|-----------------|-------------------|
| • Warwick | MP 176.6 |
| • E. Greenwich | MP 171.9 (Future) |
| • Wickford Jct. | MP 165.8 |

RIDOT has held discussions with Amtrak to stop their Acela Regional trains at the Warwick Station because of its proximity to T.F. Green Airport. A Warwick intermodal station, to be utilized by Amtrak and the commuter service, is currently in the final design stage. The project has a \$25 million earmark under the Transportation Equity Act for the 21st Century (TEA21) and includes a people mover connection to the Airport. The East Greenwich Station is not a planned facility under the current SCCRS program. It could be a station site in the future. The Wickford Junction Station is the only new station facility to be funded under the proposed commuter service.

Stations

Many of the infrastructure improvements necessary to support the SCCRS will be in the area of the designing, building and/or modifying the passenger stations. This section is devoted to a discussion on each individual station with a general description of what is required to support the SCCRS. An introductory section on station platforms precedes the individual station descriptions.

- **Platforms**

Since the configuration of station platforms plays an important role in the overall operation of any passenger rail system, a general discussion of the key elements of station platform design is provided below.

There are two basic types of platforms; center island and side platforms. Side platforms can be subdivided into high level and low level. From purely an operations standpoint, high level, center island platforms provide distinct advantages over side platforms because trains can arrive and depart from either track without having to be concerned with making sure the departing passengers are mobilized on the correct platform. This concept allows the train dispatcher the complete freedom to operate the train on whichever track is best at the time that a dispatching decision has to be made.

Conversely, with side platforms, the train is "locked in" to using the track with access to the platform where the passengers are waiting for the train. However, site constraints such as bridges and overpasses, or cost increases to move or modify track, signal, and catenary structures frequently outweigh the operational advantages of the center island platform.

Operational advantages to having platforms that are sufficiently long saves the locomotive engineer from having to "spot" the train at the platform. Platforms that are short require the engineer to brake the train very carefully to a precise stop on the platform verses "driving" into the station at "high speed". Having to spot the train at the platform wastes time and therefore increases the overall trip time between end terminals. Initial indications are that the minimum platform lengths for commuter service should be 800 feet, which can accommodate an 8-coach train. Amtrak typically desires 1000-foot platforms.

- **Providence (MP 185.1)**

With the exception of the additional signage necessary to make the public aware of the new service, the station facility at Providence should be adequate to support the SCCRS. While not currently included in Amtrak's plans, interlocking modifications to allow trains to depart from the west end of Tracks 3 and 5 directly onto Track 7 would provide commuter train access to the new FRIP track, providing some additional operational flexibility. However, this additional work at Atwells is not being considered at this time. Along with these interlocking changes, it is further recommended that signal changes be made to support the capability to turn trains in the station.

- **Warwick (MP 176.6)**

This station is expected to serve the T. F. Green Airport, which is currently the fastest growing airport in the country. Although Amtrak has indicated they will stop the Acela Regional trains at the new intermodal station, this station requires only a minimal configuration to serve the SCCRS. The commuter service only requires platforms, shelters and canopies. Amtrak requires a more elaborate station including a station building. The building would include ticketing, waiting area, and other

amenities. The proposed intermodal station configuration being designed will incorporate all these components. This station, while anticipating commuter rail service, is being funded under another project and will proceed independent of this commuter service proposal.

Discussions are underway between RIDOT and the MBTA over extending MBTA service to this station. If the MBTA extends to T.F. Green prior to implementation of the SCCRS, modifications will be necessary to allow the MBTA trains to turnback from this station and return to Boston. Amtrak has indicated they will not allow commuter trains to turnback on either of the NEC main tracks. An alternative would be to run the MBTA trains in on the FRIP track and allow them to turnback from there. This presents some additional issues, however. The FRIP track will not be electrified and would limit commuter service to diesel equipment. This is not a problem today, but Amtrak has expressed concerns that it may present a problem in the future. In addition, there will be elevation differences between the FRIP and NEC track at the Coronado Street Bridge. Amtrak has expressed a preference to have the MBTA trains continue on to Wickford Junction and use a side track there to turnback. Currently, the proposed SCCRS service plan does not anticipate a siding at Wickford Junction, however Amtrak has made provisions for the siding in their electrification project.

- **East Greenwich (MP 171.9)**

Although this station is not being considered as part of the initial operating plan, it is being discussed here because, from a planning perspective, it is more economical to include it in the planning process at this time. The configuration for this station can be the same as for Wickford Junction. No additional station tracks or sidings will be required at this location. There are no capital costs allocated under the SCCRS Program.

- **Wickford Junction (MP 165.8)**

This station is expected to generate the highest ridership counts for the SCCRS. The same typical commuter rail configuration previously discussed will also be adequate to serve Wickford Junction. Although side platforms and a station siding (and two interlockings) were originally proposed for this location, the siding does not provide any operational benefits to the full corridor SCCRS and therefore has not been included in the costs for that option. If an incremental service is utilized, then a siding with an interlocking will be required.

Although the operating plan will work using side platforms, a center island platform is more desirable from an operations standpoint and therefore was considered as an option. A site inspection made recently indicates that it would be possible to relocate main track #1 to the north to make room for a center island platform. However, since Amtrak's electrification project appears to be nearly complete at this location, a major funding factor was the expense of relocating the catenary facilities and spreading the track centers. In addition, the highway bridge constrains the site and makes the use of an underpass sidewalk a more effective pedestrian access than an overpass to a center island platform.

- **Kingston (MP 158.1)**

Kingston Station is currently serving Amtrak patrons. Extensive upgrades have been completed on the station and the parking facilities. Kingston is currently a "one sided" station (eastbound only) and the operational problem of allowing only one train in the station at a time will become even more restrictive when additional SCCRS trains are added. It is understood that plans exist to correct this situation by

constructing a platform and a shelter on the westbound side and providing an overpass. The planned conversion of Kingston Station to a "two sided" station becomes even more critical with the addition of the SCCRS.

No additional station tracks or sidings will be required at Kingston unless it is to be used as a terminal for the SCCRS. If Kingston is to be used as a terminal, a "station" track will be required along either the north side of track #1 or the south side of track #2. Ideally, the "station track" would have its own platform and connect to the NEC at Kingston Interlocking. This track would enable the SCCRS trains to turn back to Providence, clear of NEC main track operations. A siding for future SCCRS trains on the Track 1 side has been included in Amtrak's high speed rail project and electrification structures have been installed accordingly.

- **Westerly (MP 141.3)**

Westerly Station has been serving Amtrak patrons and certain upgrades have been constructed for the station and the parking facilities. Since Westerly is being considered as the final terminal for the SCCRS, it would be advantageous to consider a small passenger yard at this location. Ideally, the yard would be located at some point west of the station. A siding for future SCCRS trains on the Track 1 side has been included in Amtrak's high speed rail project and the High Street Interlocking plans.

Support Yard (Layover Facility)

A small support yard will be required for the cleaning, servicing and overnight storage of the trainsets to be used for the SCCRS. Preliminary indications are that a maximum total of four trainsets will be required to initiate the SCCRS. Since Westerly is proposed to be the final terminal for the SCCRS, it is the most ideal location for the yard from an operations standpoint and to minimize deadheading. However, a new layover yard is being designed in conjunction with the MBTA to handle MBTA trains operating on the Northeast Corridor into Providence. This yard (located in Pawtucket) is being designed to handle eight trainsets, providing adequate storage for the proposed commuter service trainsets. This yard would also be used for midday storage of Providence trains. Both configurations are estimated in the O&M cost section of this report.

In addition to the storage of rolling stock, there are also other considerations in determining the overall size of the facility as shown below:

- Availability of suitable "railroad" property
- Suitable access for service vehicles
- Mechanical Department needs for inspecting & servicing
- Small office with facilities for T&E crews and communications
- Potential for use by other agencies (CDOT and MBTA)
- Security issues such as fencing and lighting

Track

As mentioned previously, Amtrak's NEC between Providence and Westerly, RI is a two track, high-speed railroad, capable of supporting much higher train densities than currently exist. Maximum authorized speeds (MAS) were boosted to 150 MPH as part of Amtrak's High Speed Rail Project. Since the MAS for the SCCRS is not anticipated to require speeds higher than 80 MPH, the existing and proposed NEC track

infrastructure will provide more than sufficient resources to operate the SCCRS without any further upgrades or enhancements. Other track considerations include the proposed freight track (FRIP) and the possible use of passing sidings.

- **Freight Rail Improvement Project**

The Freight Rail Improvement Project (FRIP) essentially involves the upgrade of an existing track and the construction of a new "third track" over 17 miles of the NEC between Providence and Davisville. There are numerous interlocking upgrades and additions at Atwells, Cranston and Hills Grove. The overall objective of the FRIP is to provide upgraded facilities so that the Providence and Worcester (P&W) Railroad can handle increased intermodal service to and from the deepwater port at Quonset Point. The new FRIP track and interlocking facilities being designed are being fully coordinated with the NEC facilities.

Although initial operations planning efforts do not envision the need for SCCRS trains to use this new "freight track", it represents a significant resource for possible future SCCRS use since it will accommodate passenger train speeds. As future Amtrak, MBTA and SCCRS train schedules start to materialize, having a third track available for part time SCCRS usage could provide significant flexibility in train scheduling. Scheduling flexibility will be much less with the existing two-track system. Considering the track and interlocking configuration proposed for the FRIP, it is unlikely that part time usage of the "third track" by SCCRS trains would adversely impact the proposed P&W freight train operation. However, usage of the FRIP track for commuter operations will need to be discussed with the P&W and will limit the choice of fleet locomotives to diesel only since the FRIP will not be electrified.

- **Passing Sidings**

Some previous conceptual planning for the SCCRS was done using short passing sidings at some of the intermediate stations. The idea behind this proposal was that the commuter train could "duck in" the sidings to allow an Amtrak train to overtake the commuter train while it is stopped in the station. Although this concept initially looks attractive, further research indicates that, even under ideal conditions, the normal operation of the signal system could cause the commuter train an "automatic" delay of from 5 to 6 minutes while waiting for the Amtrak train to pass. This concept was also expensive because it involved the construction of two new interlockings as well as up to 1500 feet of new track between the two interlockings.

It is strongly recommended that this concept be abandoned because it "builds in" 5 to 6 minutes of delay for SCCRS trains and consequently does not add any benefit to the operation.

More suitable solutions to solving potential "overtake problems" should be available by using various combinations of the following:

- Using the existing 80 MPH crossovers for SCCRS trains
- Resourceful train scheduling and dispatching
- Using the third track (FRIP) for SCCRS trains

Signal System

The existing signal system currently in place on the NEC between Providence and Westerly will adequately support the operation of the SCCRS. Preliminary analysis of the overall capacity of the line was performed and planning for this report assumed that clear signal headways of 5 minutes could be achieved on the NEC.

No interlocking reconfigurations are necessary to support the SCCRS. If SCCRS trains can use the third track between Providence and Warwick, some interlocking modifications may be necessary at Atwells to permit SCCRS trains access between the station platforms at Providence and FRIP track.

Electrification

While it is common knowledge that a electrification system is being constructed to power all Amtrak trains, previous planning efforts have not addressed the use of the new traction power system for SCCRS trains. There are both advantages and disadvantages to using electric traction for the SCCRS. From an operational standpoint, there is little question that the use of electric traction for SCCRS trains would provide significant train performance advantages. The operational advantages of higher performance would be realized mainly in the areas of decreased trip times, and greater scheduling flexibility.

If the use of electric propulsion is to be considered, additional yard and station tracks (beyond Amtrak's plans) would have to be equipped with a catenary system. Another consideration is whether or not Amtrak's substation design has sufficient capacity to handle the added load created by the operation of electric SCCRS trains.

On the positive side, most of the infrastructure necessary to support electrified commuter rail service is already funded through Amtrak's NECIP and, from that standpoint, it would seem to make sense that this option should be given full consideration. In the meantime, however, the operations planning work for this report used diesel propulsion.

1.3 Introduction to Service Alternatives

Although several train schedules were "conceptualized" for the SCCRS during early planning efforts, the main purpose of these "early" schedules was to identify potential "slots" for RI DOT commuter rail service over the NEC between Providence and Westerly. Earlier operating analyses were based on a 52-train Amtrak schedule. Recently Amtrak has agreed to a 34-train schedule which is the basis of the analyses for the service options which follow. Although some initial effort was made to achieve coordination between Amtrak service and the SCCRS, full integration could not be achieved for a number of reasons as shown below:

- The proposed Amtrak schedules are not fully developed.
- The proposed Amtrak schedules have to "blend" with proposed MBTA schedules.
- Proposed SCCRS schedules must be coordinated with proposed Amtrak schedules.
- The proposed SCCRS must "connect" with proposed MBTA trains at Providence.

While there has been progress toward resolving the above issues, some additional operations planning work was accomplished by using Amtrak's Train Performance Calculations (TPC) for their high Speed Rail (HSR) and Northeast Direct (NED) services. Amtrak's 34-train Timetable and Amtrak's TPC outputs for HSR and

NED trains operating between Providence and Westerly were “coded” into the TSA software program. Stringline graphs defining Amtrak's operating pattern were then developed and the available "operating windows" were identified for future SCCRS trains.

Amtrak's Transportation Planning Department had previously produced some TPC outputs for SCCRS trains. These TPC outputs were "post processed" and the data was coded into the TSA program, superimposing the SCCRS trains over the Amtrak operation.

Stringline diagrams are the primary graphical tools used for analyzing the interaction of trains as they move between stations and interlockings. Stringline diagrams were also used to define the facilities required to support the service. For the purpose of this report, stringline diagrams were prepared showing the integration of all train service over the route between Westerly and Providence.

Although there are minor conflicts created by superimposing the proposed SCCRS trains over the proposed Amtrak 34-train schedule, these dispatching conflicts can be resolved through relatively minor scheduling adjustments and dispatching changes.

Train dispatching conflicts between the Amtrak trains and the SCCRS trains were resolved and an operating plan suitable for initial discussions started to evolve.

In order to define conceptual planning for the SCCRS, the preliminary operating plan had to make certain assumptions concerning as to when and how the trains might operate. The following assumptions apply to the operating plan. The operating plan will have to be revised to reflect any changes in these assumptions.

- The SCCRS would be structured to provide peak period, peak direction service from Westerly to Providence during the mornings and from Providence to Westerly in the evenings.
- The SCCRS would be initially scheduled to meet MBTA trains to and from Boston. Cross platform transfers with 5-minute connections at Providence are desirable.
- The station stop at East Greenwich has been included in the plan for planning purposes only, the station will only be developed based on future needs.
- Although the plan operates the service to Westerly, any (or all) trains can be turned at Kingston if desired. (Additional facilities may be required.)
- Although the preliminary operating plan provides some general ideas as to how the SCCRS might operate, much remains to be done in the area of schedule coordination between Amtrak and the MBTA before any "final " operating plan can be developed. Based on the assumption that some SCCRS riders will be using the service as a connecting leg to Boston, the final MBTA schedules must be refined and coordinated with Amtrak operations.

In summary, the development of a final operating plan will ultimately depend on complete integration of Amtrak, MBTA and SCCRS schedules. These integrated schedules will "blend" all train service and be free of operational conflicts between trains.

1.4 Stand-Alone Commuter Service (Alternative 1)

Hours of Operation

Initial operations planning efforts established a base level of service envisioned to serve passengers commuting to and from work. Although certain ridership statistics were furnished for use in this report, those statistics only indicate the expected daily boardings (origins) but do not indicate "time of day" usage. For the purpose of this initial effort, it is assumed that the riders described will be commuting to Providence and/or Boston in the morning and returning in the evening.

The following is a general description of what has been established as a minimal level of train service that would be made available to riders.

- **A.M. Peak Period**

A total of five SCCRS trains would be operated from Westerly to Providence, all of which are scheduled to arrive between 5:58 A.M. and 8:20 AM. All trains make the intermediate station stops. These trains are scheduled to arrive in Providence 5 minutes before the existing MBTA trains are scheduled to depart for Boston. SCCRS trains were arbitrarily numbered to coincide with the MBTA trains and the schedule detail is contained in timetable format in the Appendix to this Report. This proposed SCCRS schedule provides a reasonable selection of train service for connections to Boston. Again, it is important to realize that the A.M. peak period operation as shown is based on connecting to the MBTA trains to Boston.

A review of the stringline graphs indicate that there will be significant flexibility in scheduling the A.M. peak period SCCRS because there are no Amtrak eastbound trains in the area until after 8:30 AM.

- **P.M. Peak Period**

A total of five SCCRS trains would be operated from Providence to Westerly, all of which are scheduled to depart between 4:50 P.M. and 7:33 P.M.. All trains make the intermediate station stops. Unlike the A.M. peak period operation, there is more competition for track and station resources created by 4 westbound and 5 eastbound Amtrak trains and the proposed 5 westbound SCCRS trains during this period. Initially, attempts were made to provide the same 5 minute connecting service from the MBTA trains at Providence, however further investigation disclosed that there were some train dispatching conflicts between the proposed Amtrak 34-train timetable and the existing MBTA service between Boston and Providence. These train conflicts can be seen on the stringline graphs.

Although these train dispatching conflicts will eventually be resolved, the solution to these conflicts will most likely result in schedule changes to the MBTA trains. The scheduling for the departures of the P.M. peak period SCCRS trains then became focused on achieving harmony with the 9 Amtrak trains scheduled through the study area during this time. As shown on the stringline graphs, an operable schedule has been developed which allows the 5 SCCRS trains to operate harmoniously with the proposed Amtrak service. The departure times, as well as the detailed schedules, are shown in timetable format in the Appendix to this Report.

- **Off-Peak and Weekends**

The operation of off-peak, midday and/or weekend service will not require any additional equipment or facilities, however there will be increased operating costs in the form of crew labor, energy and maintenance of rolling stock. The key to helping RI DOT make decisions on operating off-peak and/or weekend service is likely to depend on whether there is a market for this type of service. Currently, it is not known what ridership levels can be anticipated for these periods. Some commuter rail agencies have had success with a "build it and they will come" approach, however that depends largely on how the service is marketed to the traveling public.

Headways

The term "headway" is defined as the time between train departures operating in the same direction. Headways are one of the primary "drivers" in determining facility requirements and therefore, one of the most important parameters to be considered in the operations planning process. The answer to the question of "how frequently should the trains operate" is normally determined during the process of developing an operating plan and in conjunction with ridership demand.

During weekdays, peak period headways are normally a function of the variables discussed below, as determined by the requirements of the operating plan:

- Ridership demand
- Seating capacity of the vehicle
- Number of cars in a train's consist
- Capital, operating and maintenance costs
- Extensiveness of support facilities

For initial planning purposes, an operating plan using 20 to 30 minute peak period headways is normally acceptable. The closer the headways, however the more cars and locomotives required to operate the plan. As stated earlier, the initial operations planning efforts for the SCCRS attempted to achieve 5-minute connections to the MBTA trains at Providence, where possible. The connections with the MBTA are initially driving the headways for the SCCRS trains. The result of this is shown on the operating plan with the five A.M. peak period SCCRS trains operating on headways that range between 24 minutes and 51 minutes. The five P.M. peak period SCCRS trains operate on headways that range between 27 minutes and 55 minutes.

In an ideal situation, it is desirable to try to achieve more consistent headways for the service, however this would involve pursuing any of the following alternatives as shown below:

1. Coordinate scheduling with MBTA service to meet the goals of both.
2. Break the connection (or longer connecting times) to the MBTA
3. Negotiate for changes in the Amtrak schedules.
4. Add more track and interlockings at strategic locations.

Of the four alternatives listed above, alternative #1 initially appears to be the most reasonable and potentially achievable. Off-peak and weekend headways are not driven by ridership demand. They are "policy" headways and, as such, are specified by RI DOT.

Equipment & Fleet Size

The initial concept provides for using standard diesel locomotives and trainsets consisting of either three or four coaches. For each trainset, the last car will be a cab car so as to enable the train to operate in "push-pull" service. This will eliminate the time consuming process of turning locomotives and running the locomotive around the train to the other end at the terminals.

TPC runs were made using a diesel locomotive and 4 bi-level passenger cars. The type of equipment to be used would be similar to that being used by the MBTA between Boston, MA and Providence. If electric propulsion is to be considered, an electric locomotive would replace the diesel locomotive. The coaches and the cab cars would be the same as for diesel service.

Fleet size is defined as the total number of cars and locomotives required to support the operating plan. Fleet size is primarily a function of the peak period headways as shown in the operating plan and the number of riders using the service. Trip times, as well as the time necessary to turn trains at the end terminals, are also major factors in determining the fleet size. In order to provide schedule reliability, turning times must include approximately 5 to 10 minutes of "recovery time" which provides some cushion for minor train delays. Recovery time is in addition to the time it actually takes a crew to change from one end of the train to the other and prepare for reversing direction.

Since the cost of purchasing, leasing and operating cars and locomotives is considerable, it is extremely important to accurately predict the fleet size required. The equipment required for each of the service alternatives is presented in Section 3.7 of this report. The Stand-Alone service requires 3 trainsets to operate the service in the year 2000. No additional equipment should be necessary to operate off-peak and/or weekend service, but labor costs and all other aspects of running and maintaining the equipment would add a significant cost compared to peak-hour service.

In addition to the trainsets necessary to protect revenue service, one spare trainset is necessary to protect any "in service" failures, and cover normal car and locomotive maintenance margins. If the SCCRS can be integrated with either MBTA and/or CDOT commuter rail operations, it may be possible to eliminate the extra trainset mentioned above. If, however, the SCCRS is developed as a stand-alone system, the spare set will be required.

Station Dwell Times

Although low level platforms are less expensive to construct, high-level platforms result in shorter station dwell times and will help to reduce overall trip times. Other benefits to high-level platforms are listed below:

- Insure that ADA requirements are met
- Better access control for security
- Facilitates conversion to automated fare collection

High-level platforms are recommended for this project and one-minute dwell times were assumed for the operations plan discussed in this report.

Ridership

Ridership forecasts (prepared by Cambridge Systematics, Inc. in 1995) for all SCCRS stations (except for East Greenwich) were provided in the form of "Daily Boardings". The total daily boardings for the Year 2000 for proposed station stops between Westerly and Providence are projected as follows:

• Westerly	268
• Kingston	1367
• Wickford Junction	2869
• Warwick	<u>454</u>
	4958

An accurate projection of the number of seats is critical because having more seats than required drives up the cost for coaches, and having too few seats will result in standee conditions. A review of MBTA train audits, plus inputting the time of travel and departure and arrival times for the proposed service, resulted in an estimate of the ridership demand for each of 5 peak period trains. For the year 2000 each peak directional period, the total of approximately 2,500 boardings are projected to be 10% for the first train, 20% each for the second, fourth and fifth trains, and 30% for the third train. Therefore, the maximum number of seats required is 750 (2500 x .30).

Trip Times

The overall trip time between Providence and Westerly for an SCCRS train making all station stops (incl. East Greenwich) is 50 minutes in either direction. The 50-minute trip time for the 43.8 miles produces an average speed of 52.5 MPH, including the time for station stops. The 52.5 MPH average speed is significant because it is better than most other commuter rail systems currently operating in the United States and is therefore very competitive with highway travel from purely a time standpoint. Without the East Greenwich Station stop, the trip time will be slightly less than 50 minutes.

Train & Engine Service Personnel

Regardless of whether the train's consist is 3 or 4 cars, each train will require at least one Engineer, one Conductor and one Assistant Conductor. These employee counts could be modified if the fare collection process can be automated. Since each crew must be paid a minimum of 8 hours pay, it would be entirely possible to add some off-peak midday service without adding any crew labor costs. There would, however, be some incremental costs for locomotive fuel and related equipment maintenance, based on the increase in car-miles.

Operating & Safety Rules

Since the NORAC Operating Rules currently apply to all MBTA and Amtrak train operations on the NEC, it is anticipated that the SCCRS will come under the jurisdiction of those rules. Timetable Special Instructions may need to be developed for specific SCCRS operational procedures over the NEC.

Current MBTA Operations

The MBTA currently operates 8 round trip trains between Providence and Boston during weekday service, with discussions underway to go to eleven round trips soon. The additional MBTA trips to and from Providence will result in more flexibility for connections with the SCCRS.

The preliminary work done as part of this report indicates that although it is relatively easy to "match up" the morning peak period trains at Providence, it is more difficult to do the same for the evening peak period trains due to greater Amtrak operations in the afternoon and early evening hours. Since the MBTA has not yet developed their future operating plan to coordinate with Amtrak's final 34-train schedule for service between Providence and Boston, it is difficult to predict exactly how the SCCRS will operate if the two services are to be connected.

1.5 CDOT Service Extension (Alternative 2)

Concept

The Stand-Alone Commuter Service (Alternative 1) for the South County Commuter Rail Service defined the baseline level of commuter rail service expected to operate between Providence and Westerly, RI.

The "stand-alone" SCCRS operation essentially provided for peak period, peak direction service connecting with existing MBTA service between Providence and Boston, MA. No off peak or reverse peak service was considered as part of the previous operations planning effort. Hours of operation, headways, ridership and trip times are projected to be very similar to those for Alternative 1. Since CDOT service currently operates only as far east as New London, CT, no consideration was given to coordinating SCCRS and CDOT service as part of the original operations planning effort. The proposal of extending CDOT service east to Westerly and Providence is based primarily on the concept of having a joint CDOT/SCCRS overnight layover facility at Westerly, RI.

Revisions to Existing CDOT Service

In order to achieve the CDOT/SCCRS integrated service plan, it was necessary to make some changes to CDOT's current schedule, including peak and reverse peak direction service, during both the A.M. and P.M. peak periods. These revisions are summarized as follows:

- **A.M. Peak Period**
 - All train service originates at Westerly, RI. CDOT trains no longer originate at New Haven, CT as done currently.
 - Train #3645 now originates at Providence as a turn from #5802, the first eastbound SCCRS train.
- **P.M. Peak Period**
 - Train #5815 operates through Westerly to New Haven as a new train and turns back for train #3662 which operates through to Westerly and lays over for the A.M.

The scheduling details of the conceptual operating plan for the CDOT service extension are included in the Appendix to this Report as stringline graphs and timetable format.

Equipment Requirements

The "stand-alone" SCCRS operating plan described earlier required a total of three trainsets to operate peak period, peak direction service. The CDOT Service Extension requires 5 trainsets to operate the service in the year 2000. It must be noted that the plan offers an increase in train service to New London, CT and Westerly, RI in addition to increasing service during the reverse peak period.

Westerly Layover Yard

The operating plan for the CDOT service extension clearly indicates the advantage in providing a joint CDOT/SCCRS layover yard at Westerly, RI. The following advantages would accrue to constructing a yard at this location:

- CDOT/ RI DOT cost sharing for the capital expenditures for design and construction of the yard.
- CDOT/RI DOT cost sharing for the operating costs of the yard.
- Elimination/reduction of deadhead train miles for CDOT on the NEC.
- Reduced future train traffic congestion because of a reduced number of deadhead trains between New Haven and New London, CT.

1.6 MBTA Service Extension (Alternative 3)

Concept

The Stand-Alone Commuter Service (Alternative 1) for the South County Commuter Rail Service defined the baseline level of commuter rail service expected to operate between Providence and Westerly, RI.

The "stand-alone" SCCRS operation essentially provided for peak period, peak direction service connecting with existing MBTA service between Providence and Boston, MA. Off-peak or reverse peak service was not considered as part of the previous operations planning effort. Hours of operation, headways, ridership and trip times are projected to be very similar as presented previously under Alternative 1. The scheduling details of the conceptual MBTA/SCCRS integrated operating plan for the MBTA service extension are contained in the Appendix to this Report as stringline graphs and timetable format.

Revisions to Existing MBTA Service

In order to achieve the MBTA/SCCRS integrated service plan, it was necessary to make some changes to the MBTA's current schedule, including reverse peak service, during both the A.M. and P.M. peak periods. These revisions are summarized as follows:

- **A.M. Peak Period**

- A new train (#M799) was added from Boston to provide an early morning arrival at T.F. Green Airport and to turn as train #806 from Westerly to Providence.
- Train #801 from Boston now operates through to Westerly, RI instead of South Attleboro, MA and turns as train #810 from Westerly to Providence.
- Trains # 802, #804, #806, and #810 now originate at Westerly and provide peak period, peak direction service into Providence and Boston. Train #808 (previously from So. Attleboro) now originates at Westerly for peak morning service to Providence and Boston.

- **P.M. Peak Period**

- Train #813 from Boston now operates through Providence to Westerly, providing early P.M. service to T.F. Green Airport and turns as train #822 from Westerly to Providence.
- Trains #815, #817, #819, and #821 all now operate through Providence to Westerly, providing peak period, peak direction service into Westerly.
- Reverse peak trains #822 and #824 are turnbacks from Westerly which provide early evening service from T.F. Green Airport to Boston.

Equipment Requirements

The "stand-alone" SCCRS operating plan described earlier required a total of three trainsets to operate peak period, peak direction service. The MBTA Service Extension, with most trips covered by the MBTA's fleet, requires purchase of one complete trainset plus four coaches and an engine. More explanation is provided in Section 3.7 of this report.

SECTION 2.0 SERVICE OPTIONS, OPERATING ASSUMPTIONS AND COSTS

2.1 Introduction

The State of Rhode Island is evaluating potential intrastate and interstate commuter rail service to serve the area between Westerly and Providence. Three alternatives have been identified and corresponding short-term operating and maintenance cost estimates have been developed.

One service option is an intrastate "stand-alone" service that connects via across platform to Massachusetts Bay Transportation Authority (MBTA) trains at Providence. Layover facilities at Pawtucket (Alternate 1A), and Westerly (Alternate 1B) were considered. An eastward extension of the Connecticut Department of Transportation's (CDOT) Shore Line East (SLE) New Haven - New London service was considered as the second option. An interstate extension of MBTA operations westward from Providence through Rhode Island is the third option.

The purposes of this report are to (1) assess the operational issues and cost of the service options and (2) to develop an initial draft of information required to determine the preferred service option. Considerations such as operations planning, ridership and capital needs have been evaluated, in addition to operating costs, in order to determine which service option best meets the State of Rhode Island's commuter needs.

All service options have five morning and five afternoon rush hour trains. There are no scheduled midday or late night commuter rail services. Service is planned to only operate on weekdays, with no service being provided on weekends or holidays.

Each of the service options is reviewed in turn. Alternatives 1A and 1B, intrastate service using either a Pawtucket or Westerly overnight layover, are described and evaluated in the same section to facilitate their comparison. The CDOT easterly service extension from Connecticut and the MBTA westward service extension from Massachusetts are described as Alternatives 2 and 3, respectively. In each case, the proposed service option and its various operational requirements and costs are described. A more detailed breakdown of alternative service costs is provided in Section 4.0, Financial Analysis, and in the Appendix to this Report. The following table presents a summary of the costs.

Table 2.1.1
SCCRS Cost Summary (Yearly)

	Alternative 1A	Alternative 1B	Alternative 2	Alternative 3
Operating and Maintenance Costs	\$6,859,121	\$6,076,156	\$5,675,004	\$7,556,574

These estimates do not include any feeder or off-peak bus service, which may yet be identified for operation by the Rhode Island Public Transit Authority.

It should also be noted that the rolling stock (passenger car) requirements are based on available ridership forecasts, which predate the ongoing service planning. Should these forecasts eventually be adjusted upwards, vehicle requirements will have to be revised accordingly. Any increase in train size (length) poses concerns for the MBTA service extension option, particularly for the heavily patronized Providence/Attleboro/Boston route, which utilizes trains up to eight cars long.

2.2 Alternatives 1A and 1B: Rhode Island DOT Stand-Alone Service (Pawtucket or Westerly Layover Facility)

Service Scenario

Commuter rail services for each of the two intrastate options consists of five A.M. and five P.M. rush hour trains between Providence and Westerly. Morning commuter rail service from Westerly to Providence would connect across platform with existing MBTA service east to Boston. Afternoon commuter rail service from Providence to Westerly would return commuters via the same cross platform transfer. Patrons boarding or departing trains at stations east of Providence would require dependable out-of-state MBTA service performance for on-time delivery to their final destinations. The intrastate commuter service would have no direct operating control over existing or planned MBTA out-of-state service.

Alternative 1A assumes that all trains are held overnight at the planned MBTA/RIDOT layover facility in Pawtucket. This facility will house MBTA trains assigned to the Providence/Attleboro service and will be designed with additional capacity that could be used to store and service intrastate trains.

Table 2.2.1 has been developed to show proposed train numbering along with deadhead and revenue train miles. The percentage of revenue to total train miles is an indication of the efficiency of the planned service (i.e.; the greater the revenue miles the greater the ability for the service to generate revenue).

Table 2.2.1
Alternative 1A Stand-Alone Intrastate Service with a Pawtucket Layover

Train No.	Comments	Origin	Destination	Period	Dead-head	Train Miles Revenue	Total
5802 DH	DH for 5802	Pawtucket	Westerly		47	0	47
5802	Turn to 5801	Westerly	Providence	A.M.Rush	0	43	43
5804 DH	DH for 5804	Pawtucket	Westerly		47	0	47
5804	To Pawtucket	Westerly	Providence	A.M.Rush	4	43	47
5806 DH	DH for 5806	Pawtucket	Westerly		47	0	47
5806	To Pawtucket	Westerly	Providence	A.M.Rush	4	43	47
5808	Turn of 5801	Westerly	Providence	A.M.Rush	4	43	47
5810	Turn of 5803	Westerly	Providence	A.M.Rush	4	43	47
5822	Turn of 5813	Westerly	Providence	P.M.Rush	4	43	47
5824	Turn of 5817	Westerly	Providence	P.M.Rush	0	43	43
5801	Turn of 5802	Providence	Westerly	A.M.Rush	4	43	47
5803	Turn of 5804	Providence	Westerly	A.M.Rush	0	43	43
5813	Turns as 5822	Providence	Westerly	P.M.Rush	4	43	47
5815	Turns as 5824	Providence	Westerly	P.M.Rush	0	43	43
5817	From Pawtucket	Providence	Westerly	P.M.Rush	4	43	47
5817 DH	DH for 5817	Westerly	Pawtucket		47	0	47
5819	From Pawtucket	Providence	Westerly	P.M.Rush	4	43	47
5819 DH	DH for 5819	Westerly	Providence		47	0	47
5821	Turn of 5824	Providence	Westerly	P.M.Rush	4	43	47
5821 DH	DH for 5821	Westerly	Providence		47	0	47
Totals					322	602	924

Alternative 1B assumes that all trains are held overnight at a layover facility in Westerly. This would require that land be acquired and a facility built on the north side of the tracks adjacent to the Westerly station. The midday layover of equipment would take place at Pawtucket as in Alternative 1A. The daily train mile breakdown for Alternative 1B is shown below in Table 2.2.2.

Table 2.2.2
Alternative 1B Stand-Alone Intrastate Service with a Westerly Layover

Train No.	Comments	Origin	Destination	Period	Dead-head	Train Miles Revenue	Total
5802	Turns as 5801	Westerly	Providence	A.M.Rush	0	43	43
5804		Westerly	Providence	A.M.Rush	4	43	47
5806		Westerly	Providence	A.M.Rush	4	43	47
5808	Turn of 5801	Westerly	Providence	A.M.Rush	4	43	47
5810	Turn of 5803	Westerly	Providence	A.M.Rush	4	43	47
5822	Turn of 5813	Westerly	Providence	P.M.Rush	0	43	43
5824	Turn of 5817	Westerly	Providence	P.M.Rush	0	43	43
5801	Turn of 5802	Providence	Westerly	A.M.Rush	0	43	43
5803	Turn of 5804	Providence	Westerly	A.M.Rush	0	43	43
5813	Turns as 5822	Providence	Westerly	P.M.Rush	4	43	47
5815	Turns as 5824	Providence	Westerly	P.M.Rush	4	43	47
5817		Providence	Westerly	P.M.Rush	4	43	47
5819	Turn of 5822	Providence	Westerly	P.M.Rush	4	43	47
5821	Turn of 5824	Providence	Westerly	P.M.Rush	0	43	43
Totals					32	602	634

Revenue Mileage

Alternative 1A (Pawtucket Layover) has a daily total of 924 train miles with 602 revenue miles (65% revenue miles). Alternative 1B (Westerly Layover) has a total of 634 train miles with 602 revenue miles (95% revenue miles). The primary difference between these two intrastate commuter rail service options is the number of non-revenue or deadhead miles required to make the service possible. Trains in Alternative 1A must deadhead between Pawtucket and Westerly for the morning rush and must deadhead between Westerly and Pawtucket after the evening rush. The deadhead mileage for the midday layover at Pawtucket is identical for both options.

Additional fuel, maintenance, and crew costs accrue with the 290 extra miles of daily deadhead moves under Alternative 1A. There are approximately 1450 additional deadhead miles per week under Alternative 1A which are primarily responsible for the difference in costs of the options.

Train Crews

The above two options offer only morning and afternoon rush hour service, concentrating revenue service at either end of the 5-day workweek. Train crews have two periods of great activity, split by a period of midday inactivity. For that reason, crews would be required to start early and stay late.

For example, Alternative 1A has a 5:08 A.M. departure from Westerly for Providence (5802), and an 8:21 P.M. arrival at Westerly from Providence (5821). Train crews would be called no later than 3:00-3:30 A.M. and need to be available until 9:00-9:30 P.M., an 18-hour service day. The length of that service period would not be feasible for a single train crew. In addition, it is highly unlikely that one train crew with a midday rest period could be available through the entire service window.

Therefore, two 8-hour crews have been assumed for each trainset. Spare crews have been calculated using the same number of crews, assuming an average number of holidays, vacation days, sick days and personnel days. As a result, there would be no train crews on duty during the midday inactive period.

The non-revenue mileage for Alternative 1A is substantially higher than for Alternative 1B, and one would logically assume that the crew costs would be higher. This is probably not the case as the two operating scenarios are different but both require that crews remain on duty for substantial portions of the day.

In Alternative 1A, crews report to Pawtucket and deadhead to Westerly to begin the day. At midday, the crews are in Providence and can easily layover at Pawtucket. At night, all crews must deadhead back to Pawtucket from Westerly. Alternative 1A has many crew hours of deadheading. Crews report to Westerly in Alternative 1B and wind up at midday in Pawtucket. To change crews at Pawtucket, the afternoon crew must be transported from Westerly to Providence and the morning crew must be brought back to their on duty reporting station at Westerly. In this option trainsets do not deadhead but crews do. Therefore, it is anticipated that labor costs would be essentially the same for both options.

Train Service Support

Service support is required for any commuter service scenario. For a stand-alone service, such support may be higher than would be the case in a service extension, as some portion of needed service support would likely be covered under a negotiated overhead or through a fee. Uniform service support has been assumed for both intrastate and interstate service. Details are contained in the Appendix to this Report.

Mechanical Services

At this preliminary stage of alternative development, rather than determine costs for mechanical service needs using time-consuming quantity take-off methods, costs have instead been determined from unit cost calculations. Those unit costs have been secured from interviews with local service providers. Details are contained in the Appendix to this Report.

Summary

The essential difference between the two Rhode Island stand-alone intrastate service options is the location of the overnight layover in either Pawtucket or Westerly. In both instances, the midday layover would be Pawtucket. The primary difference between Alternative A and Alternative 1B service costs derives from different overnight layover locations, and the cost impact of non-revenue train miles. The same commuter rail service with a Pawtucket overnight layover results in a greater total number of non-revenue miles since trainsets must be driven 47 non-revenue miles in each direction to Pawtucket before returning to revenue service. Without a Westerly overnight layover, use of the Pawtucket layover increases the non-revenue costs from additional trainset use, and the resultant increase in train maintenance.

2.3 *Alternative 2: Shore Line East Service Extension*

Service Scenario

This commuter rail service option extends existing Shore Line East (SLE) trains eastward into Rhode Island, and adds additional trainsets as required to sustain a Rhode Island service (see Table 2.3.1). The proposed

schedule assumes that Westerly would be the primary layover location for all trains, including trains that initially depart to the east towards Providence or west towards New Haven.

Table 2.3.1
Alternative 2 SLE Service Extension

Train No.	Comments	Origin	Destination	Period	Train Miles		Totals
					Mass. & Rhode Island		
					REV	DH	
5802	Turn as 3645	Westerly	Providence	A.M.Rush	43	0	43
5804	Deadhead to Pawtucket	Westerly	Providence	A.M.Rush	43	4	47
5806	Deadhead to Pawtucket	Westerly	Providence	A.M.Rush	43	4	47
5808	Deadhead to Pawtucket	Westerly	Providence	A.M.Rush	43	4	47
5810	Deadhead to Pawtucket	Westerly	Providence	A.M.Rush	43	4	47
3645	Turn of 5802	Providence	New Haven	A.M.Rush	43	0	112
3626	Turns of 3645	New Haven	Westerly	P.M.	0	0	69
5813		Providence	Westerly	P.M.Rush	43	4	47
5700	Turn of 5813	Westerly	Providence	P.M.	43	4	47
5815		Providence	New Haven	P.M.Rush	43	4	116
3662	Turn of 5815	New Haven	Westerly	P.M.	0	0	69
5817		Providence	Westerly	P.M.Rush	43	4	47
5819		Providence	Westerly	P.M.Rush	43	4	47
5821	Turn of 5700	Providence	Westerly	P.M.Rush	43	0	43
Totals					516	36	828
Note: Alternative 2 includes 276 Revenue Miles in Connecticut							

Revenue Mileage

This service option has revenue mileage in both Connecticut and Rhode Island. Connecticut mileage comes as a result of extending existing Shore Line East trains to Westerly from Old Saybrook or New London. New train miles in Connecticut and Rhode Island are shown above.

Train Crews

Five additional train crews have been assumed for this option as a result of:

- The addition of a new Shore Line East train service within the State of Rhode Island.
- Schedule extensions of from 1-2 hours for all other existing CDOT Shore Line East trains that turn at Westerly.
- Additional trains that make trips between New Haven and Providence.

The schedule and requirement for crews must be confirmed with CDOT if this option appears to be a viable alternative. It can be anticipated that considerable change to existing Shore Line East crew runs now in place may be required to effect this new service extension.

Train Service Support

CDOT and its service provider are anticipated to provide support for this service option. Because the CDOT Shore Line East currently operates eighteen daily trains, the additional Rhode Island service will require an additional staff outlay. However, this staff should be less than that required for stand-alone Alternatives 1A and 1B, but would be more than the MBTA extension (Alternative 3). Therefore, limited numbers of staff have been added in support of the service.

Mechanical Services

The cost of mechanical services have been determined from unit cost calculations. Details are contained in the Appendix to this Report.

Summary

This service scenario is the first considered that extends existing service from New Haven to Westerly and adds additional service within the State of Rhode Island using CDOT. This new service is accomplished by changing schedules and adding trains. Crews have been added to cover new trains and the extended run times of other trains. Equipment costs are based on the annual maintenance costs and shared costs of using CDOT equipment in Rhode Island. If this option appears favorable, then all schedules and costs should be revisited to confirm ridership, possible crew schedules, and equipment turns.

2.4 *Alternative 3: MBTA Service Extension*

Service Scenario

This commuter rail service option utilizes a westward extension of existing MBTA trains in Rhode Island, with creation of one additional train originating in Boston in the early morning. This service is possible by extending and modifying existing MBTA schedules. Five morning and five afternoon rush hour trains are proposed for this service (see Table 2.4.1). Except for Train #M799 and #813, which are new trainsets, the balance of the trains are existing MBTA equipment. The proposed schedule assumes that Pawtucket will be the primary layover location, or that in some cases, the layover in Boston will be used as some trains originate in Boston.

Table 2.4.1
Alternative 3 MBTA Service Extension

Train No.	Comments	Origin	Destination	Period	Dead-head	Train Miles Revenue	Total
M799	Turn as 806*	Providence	Westerly	Reverse	0	43	43
801	Turn as 810	Providence	Westerly	Reverse	0	43	43
802/802DH	Pawtucket Layover	Westerly	Providence	A.M.Rush	47	43	90
804/804DH	Pawtucket Layover	Westerly	Providence	A.M.Rush	47	43	90
806	Turn of M799	Westerly	Providence	A.M.Rush	0	43	43
808/808DH	Pawtucket Layover	Westerly	Providence	A.M.Rush	47	43	43
810	Turn of 801	Westerly	Providence	A.M.Rush	0	43	43
813	Turn as 822*	Providence	Westerly	P.M.Rush	0	43	43
815	Turn as 824	Providence	Westerly	P.M.Rush	0	43	43
817/817DH	Pawtucket Layover	Providence	Westerly	P.M.Rush	47	43	90
819/819 DH	Pawtucket Layover	Providence	Westerly	P.M.Rush	47	43	90
821/821DH	Pawtucket Layover	Providence	Waverly	P.M.Rush	47	43	90
822	Turn of 813	Westerly	Providence	Reverse	0	43	43
824	Turn of 815	Westerly	Providence	Reverse	0	43	43
Totals					282	602	837

* New trainset

Revenue Mileage

This service option has revenue mileage in both Massachusetts and Rhode Island. Massachusetts mileage comes as a result of new trains originating from Boston and Westerly. Revenue service in Rhode Island accounts for more than 75% of all train miles in this service option.

Train Crews

Three additional train crews have been assumed for this option as a result of:

- The addition of a new MBTA round-trip train to the existing commuter service.
- Schedule extensions of from 1-2 hours for all other existing MBTA commuter trains.

The schedule and requirement for crews should be confirmed with MBTA commuter rail managers if this option is pursued as a viable alternative. It can be anticipated that considerable changes to the crew runs now in place on the MBTA commuter rail service would be required to implement this new service extension.

Train Service Support

The MBTA and its service provider will provide support for this service option. Because the MBTA currently operates over 250 daily trains, the additional Rhode Island service should not require an initial staff outlay similar in size to the intrastate stand-alone options. Therefore, limited numbers of support people have been added. Details are contained in the Appendix to this Report.

Mechanical Services

The cost of mechanical services has been determined from unit cost calculations. The equipment unit costs for equipment required expressly for the service or for shared equipment are shown in the Appendix to this Report.

Equipment that operates in the MBTA service area today (east of Providence) would operate as far west as Westerly. Approximately 50% of equipment mileage and operating time will be accrued in Rhode Island. Therefore, a usage fee has been developed for current equipment owned by the MBTA and used west of Providence for this proposed service. This shared cost is estimated to be 50% of the annual equipment maintenance cost.

Summary

This service scenario extends existing MBTA service to Westerly. This is accomplished by changing schedules and adding trains. Crews have been added to cover new trains and the extended run times of other trains. Equipment costs are based on the annual maintenance costs and shared costs of using MBTA in Rhode Island. If this option appears favorable then all schedules and costs should be revisited to confirm ridership, possible crew schedules, and equipment turns.

SECTION 3.0 EQUIPMENT NEEDS

3.1 Introduction

The service planning now being developed for this project envisions a possible extension of Massachusetts Bay Transportation Authority (MBTA) operations westward through Rhode Island or the extension of the Connecticut Department of Transportation's Shore Line East (SLE) service eastward through the State. Equipment to be utilized would be compatible the vehicle fleet now used by these operators. In the event that the State of Rhode Island opts to implement its own stand-alone service, it would be prudent, although not necessary, to utilize vehicles which are compatible with the MBTA and SLE operations. It should be noted that both MBTA and SLE trainsets have operated through Rhode Island between New Haven and Boston South Station as "extra" Amtrak trains, typically during the Thanksgiving holiday weekend. The equipment is deemed to be fully compatible with operational requirements on the Northeast Corridor.

3.2 Motive Power Technology

Motive power for commuter/regional rail services (both locomotive – hauled coaches and self-propelled vehicles) can be supplied from a variety of sources: diesel-electric locomotives, electric locomotives, dual-mode locomotives, or self propelled railers. The MBTA and SLE presently utilize an all diesel-electric fleet of locomotives for motive power needs. The Urban Public Transportation Glossary offers the following definitions for the various power technologies:

- **Diesel-Electric Locomotives:** Locomotives that use one or more diesel engines to drive electric generators that in turn supply electric motors geared to the driving axles. Speed is regulated by controlling the output of the electric motors.
- **Electric Locomotives:** Locomotives in which the propulsion is effected by electric motors mounted on the vehicle. The electric power comes from an external source (typically a third rail system or catenary system) and is converted on the locomotive by a transformer and other control equipment.
 - **Third Rail System** - An electric conductor, located alongside the running rail, from which power is collected by means of a sliding shoe attached to the truck of electric rail cars or locomotives. Third-rail voltages typically range from 600 to 750 volts. All third rail systems on railroads are direct current (DC).
 - **Catenary System** - An electric contact system in which the overhead contact wire is supported from one or more longitudinal wires or cables (messengers), either directly by hangers or by hangers in combination with auxiliary conductors made at frequent and uniform intervals to produce a contact surface nearly parallel to the top of the track rails. Catenary systems may be either direct current or alternating current (AC) ranging from 1,500 to 25,000 volts
- **Dual-Mode Locomotives:** Locomotives capable of both diesel and electric (either third rail or catenary) operation.

- **Self-Propelled Coaches:** Cars that do not require a locomotive for operation. They are powered rail cars that can be arranged either for independent operation or for operation with other similar cars. They may be either diesel-powered (DMU) or electric-powered (EMU).

3.3 Passenger Coach Technology

The basic choice in passenger coach design pertain to single- or bi-level coaches. A number of different options can be offered, including passenger amenities, door locations (vestibule end, center, or both), and dimensions. The goal is to identify the coach characteristics that best match the system's operating philosophy. Specifications on several passenger coaches are located in the Appendix to this Report. The following sections discuss the most significant aspects of this summary.

While North America's regional rail systems vary greatly in their application of passenger coach type and technology, the major systems have all faced increasing pressure for at least two decades to increase the capacity of the individual coach. This has been done for the following reasons:

- Unit acquisition maintenance and replacement costs
- Overall fleet size and accompanying storage/facility requirements
- Overall train length and accompanying platform issues of cost, land availability, and maintenance, as well as impact on crew size and costs
- Overall train weight and the accompanying impact on locomotive utilization and fuel consumption
- Station platform length

Again, while different systems have responded to these pressures in different ways, it is axiomatic that if any given system has been able to make a high-capacity multiple-level coach fit within its clearance envelope, it has done so. In Boston a creative response to the need for a high-capacity coach, coupled with significant clearance limitations, has been the 185-seat Kawasaki bi-level coach.

What had been a rather slow-moving technological process for several decades has advanced rapidly with a number of new service introductions in the 1990's. The Long Island Rail Road has acquired bi-level coaches specially configured to operate through the East River tunnels. Throughout the rest of the United States and Canada, bi-level coaches are prevalent and have been selected by many new-start regional/commuter rail services. Those at San Diego, Miami/ Ft. Lauderdale and Vancouver, for example, procured coaches based on a design developed for Toronto's GO Transit system. The California Department of Transportation recently took delivery of a fleet of new bi-level "California Cars" and Chicago's Metra uses bi-levels exclusively.

3.4 MBTA Equipment

In 1972 and 1977, the MBTA completed the purchase of the rail lines, facilities, and rolling stock used for the Boston area regional rail service from its previous owners (the Boston & Maine Railroad, the Penn Central Railroad, and Conrail). The equipment the MBTA received in this purchase had seen many years

of service. In fact, much of the equipment had been kept in service well beyond its expected economic life cycle.

In purchasing new and upgraded rolling stock, the MBTA was governed by two dictums.

- Push-pull capability to enable trains to reverse direction quickly, both at the outer ends of the various lines and at the two stub-end main terminals, North Station and South Station.
- Increased coach-seating capability, since demand has grown, especially on the southside service, to a point where coaches must seat more passengers to keep train lengths within platform capacities. Coaches have grown in capacity from 80-seat intercity cars in the early 1970's to today's 185-seat or larger Kawasaki bi-level cars. Although not fully utilized at present, station dwell-time reduction features such as high-level platforms and automatic doors have been considered in the development of the fleet. MBTA coaches purchased since 1987 have automatic door systems although these are generally used in a system with exclusively high-level platforms. With the exception of the newly constructed Old Colony Line, activation of these systems has not occurred and is not currently contemplated since the majority of the MBTA's stations have low-level platforms.

As part of the ongoing project to electrify the Northeast Corridor from New Haven to Boston, high-level platforms may be built at MBTA rail stations along this line (if federal funding is provided). If this is the case, An operational analysis for the Boston North-South Rail Link has suggested that a similar project be developed to construct high-level platforms on at least one northside line, chosen to be paired with the Boston/Providence line, so that the automatic-door feature can be used at least for one set of run through trips. Based on observations along the Boston-Providence line and in Philadelphia, it would appear that the use of high-level platforms can reduce dwell times up to 30 percent, providing that other factors such as those mentioned above are dealt with satisfactorily.

All existing service is provided by locomotive-hauled coaches. The MBTA does not use any self-propelled equipment. Trains operate in the push/pull mode; a diesel-electric locomotive is on one end typically outbound or country end of the train and a control trailer (cab control) coach is located on the opposite end. Train lengths vary based on the demand but the longest observed train is eight coaches. All lines except for the northside's Gloucester Branch and the Fitchburg Line are approved for the use of nine coach trains. The train length (consist) remains fixed throughout the day. The terms "consist" or "trainset" refer to the makeup of the train, i.e. locomotive(s) and the number of coaches, or, in the cases of self-propelled equipment, the number of units in the train. For example, a locomotive and five coaches would be a six-unit consist. Dimensions of a typical coach and locomotive are shown in Figure 3.4.1.

Locomotives

As of January 1, 1998 the MBTA owned 77 active diesel-electric locomotives, of which 74 were used in revenue service and three were used in work train and yard service (Table 3.4.1). The majority of the current locomotives are F40PH-2 models built by General Motors' Electro-Motive Division (EMD). Figure 3.4.1 shows a typical F40PH locomotive.

The original 18 MBTA F40's (road numbers 1000-1017) acquired in the late 1970's and early 1980's feature main engine-driven head-end power (HEP), the power source for the heat, lights, and air conditioning on the train. During the 1980's the MBTA implemented a significant technological change by acquiring new

F40PH-2C locomotives with separate HEP generator packages. This technological advance produces two positive benefits:

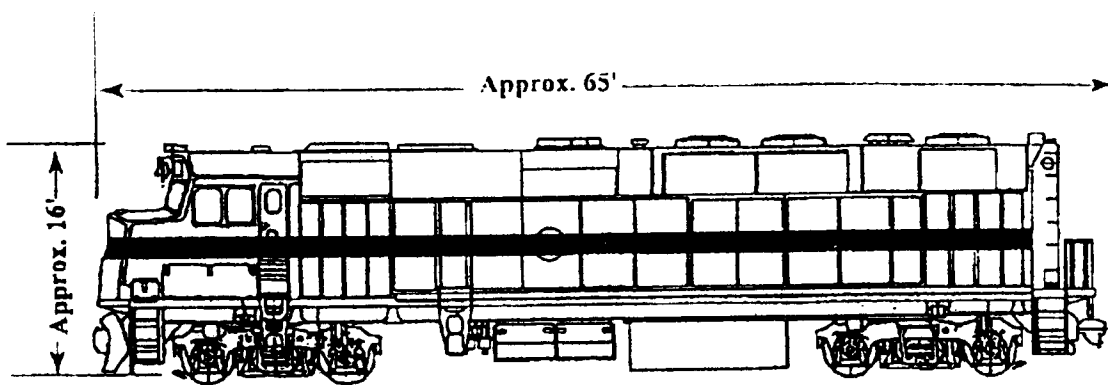
- Since the head-end power is produced by a smaller power source, the locomotive makes less noise, particularly when stopped at stations.
- Up to sixty percent less fuel is consumed by the locomotive because the main engine does not have to run continually at a high rate of speed to produce HEP.

The most recent locomotive acquisition by the MBTA has been the GP40MC class which are units rebuilt by AMF/GEC – Alsthon of Montreal. This acquisition was timed to coincide with the additional locomotive requirements imposed by the start – up of service on the Old Colony lines in 1997. Some of the units have experienced camshaft and other mechanical problems which have required repairs under warranty.

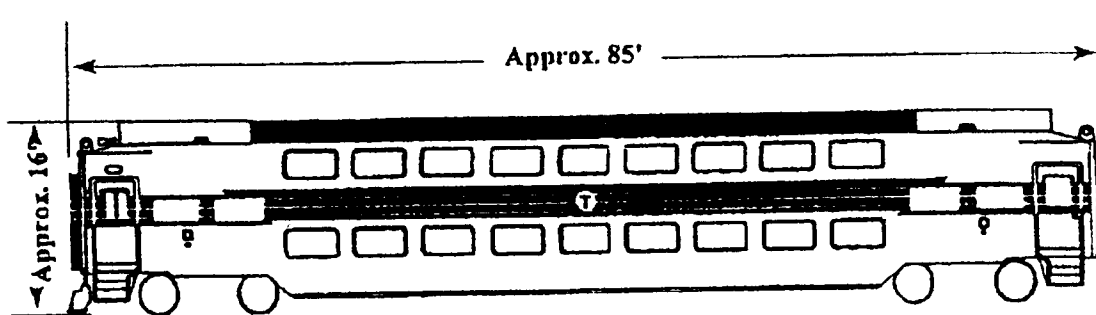
All of the existing locomotive fleet is qualified for service in the present Providence/Attleboro – Boston service and presumably will be available for expanded MBTA service in Rhode Island.

Table 3.4.1
MBTA Locomotives

Series	Model	Built By/Year Built	Rating (H.P.)	Separate HEP Generator?	Active	Out-of-Service
902, 904, 1921	GP9	EMD 1957-60	1750	No HEP, used for work service	3	0
1000-1012	F40PH	EMD 1978	3000	No	13	0
1013-1017	F40PH	EMD 1980	3000	No	5	0
1025-1033	F40PHM-2C	Morrison-Knudsen 1991	3000	Yes (Cummins)	9	0
1034-1036	F40PHM-2C	Morrison-Knudsen 1993	3000	Yes (Cummins)	3	0
1050-1067	F40PH-2C	EMD 1987	3000	Yes (Cummins)	18	0
1068-1075	F40PH-2C	EMD 1988	3000	Yes (Cummins)	7	0
1100-1114, 1140-1153	FP10	EMD 1946-47	1750	Yes	0	9
1115-1139	GP40MC	GMD 1973-75	3000	Yes (Cummins)	19	6



TYPICAL DIESEL POWERED LOCOMOTIVE



TYPICAL BI - LEVEL PASSENGER COACH

Figure 3.4.1

In the longer term, MBTA may seek to procure a “new generation” locomotive akin to the 4000 hp monocoque body-styled General Electric “Genesis Units” which are now replacing the EMD F-40PH locomotives on Amtrak’s system. Metro-North Railroad has acquired dual mode versions of this locomotive. The Amtrak units have been tested on the Providence – Boston line with MBTA coaches in the past two years, but any decision on acquisition by the MBTA has yet to be made.

Passenger Coaches

Table 3.4.2 summarizes the passenger coach roster by manufacturer and year of acquisition. A brief description of the coaches is also included, detailing seating capacity, length, and width. As shown in the table, the MBTA’s passenger car fleet (as of January 1, 1998) included 363 coaches, of which 349 area were active and 14 stored. The active fleet included 79 bi-level coaches and 270 single-level coaches. Of the 349 active coaches, 238 are blind trailer coaches (BTC) and 111 are control trailer coaches (CTC) used for push/pull operations. A 3-2 seating arrangement has become the MBTA standard since 1987.

All of the MBTA coaches are handicapped accessible. Restroom facilities are provided in some single level coaches but not at all in the bi-level fleet. For that reason, bi-level trainsets include at least one single-level restroom equipped coach, coupled next to the locomotive.

All of the MBTA coaches accommodate entrance/exit by means of a single level end-of-car vestibule with stairs and trap doors to accommodate either low-level or high-level station platforms. In developing the specifications for its bi-level coaches, the MBTA examined a variety of vestibule and door configurations as depicted in Figure 3.4.2. Some of the options provided low floor and/or double width entrance doors to expedite passenger movement, but in the interests of accommodating high and low level platforms, compatibility with the single level coaches, and the need to maximize seating capacity, the “fewer door” option was chosen. Trains equipped with these coaches have experienced increases in station dwell times, as compared with single level coaches, due to a greater number of passenger boardings and alightings through the same number of doors. This has been found to be an acceptable operational trade-off.

New coaches purchased for Rhode Island commuter rail service, as an expansion of MBTA operations, should be compatible with the existing MBTA specifications.

The MBTA commuter coaches do not provide “deep” overhead baggage racks or end-of-car storage areas for luggage, as do the Amtrak intercity coaches. Only five inches of clearance is provided between the baggage rack and the ceiling in the bi-level coaches. The racks are only 18 inches deep. By way of comparison, the intercity motor coaches which presently serve T.F. Green Airport provide large, underfloor baggage compartments approximately three feet high by eight feet deep. For the purposes of serving T.F. Green airport, consideration should be given to modifying some coaches, potentially the single-level restroom equipped coaches, with storage areas appropriately sized for luggage. This would also require identification of a sub-set of equipment within the general pool, for assignment to T.F. Green/South County Rail service.

The external identification of MBTA coaches and locomotives consists of the MBTA’s “circle T” logo and a purple-yellow stripe. This equipment is already seen daily as far west as Providence Station and may be acceptable to the ridership and the general public without seeming to be a “Massachusetts” product.

The MBTA is also examining ways to be compatible with Amtrak’s planned high-speed rail service on the Northeast Corridor (the MBTA’s Providence Line) which began in 2000. Long-term could include a new

fleet of high-performance electric locomotives dedicated to Providence Line service, along with track changes, platform improvements, and operations enhancements.

**Table 3.4.2
MBTA Passenger Coaches**

Series	Car Type	Built By	Year Built	Seats	Cars Active	Out- of- Service
200-202, 204-214, 216-258	BTC-1C Blind Trailer Coaches	Pullman-Standard	1978-79 (rebuilt 1996 by Amerail)	114	57	0
350-389	BTC-1A Blind Trailer Coaches	Bombardier	1987	127	40	0
500-532	BTC-3 Blind Trailer Coaches (with restrooms)	Messerschmitt-Bolkow-Blohm GmbH (MBB)	1987-88	94	33	0
600-653	BTC-1B Blind Trailer Coaches	Bombardier	1989-90	122	54	0
700-749	BTC-4 Blind Trailer Coaches (bi-level)	Kawasaki	1990-91	185	50	0
750-766	BTC-4 Blind Trailer Coaches (bi-level)	Kawasaki	1997	185	4	13
1500-1533	CTC-3 Control Trailer Coaches (with restrooms)	Messerschmitt-Bolkow-Blohm GmbH (MBB)	1987-88	96	34	0
1600-1652	CTC-1B Control Trailer Coaches	Bombardier	1989-90	122	52	1
1700-1724	CTC-4 Control Trailer Coaches (bi-level)	Kawasaki	1990-91	175	25	0

3.5 Shore Line East – CDOT Equipment

Shore Line East service operates between New Haven Union Station and New London, Connecticut using diesel/electric locomotive push-pull equipment.

Locomotives consist of several classes of EMD products which have been rebuilt (see Table 3.5.1.) The GP40-2H class provides the majority of the service. Eleven locomotives are shown on the December 1996 roster.

**Table 3.5.1
Rail Rolling Stock Unit Summary
Shore Line East Equipment**

Vehicle Description	Number of Units	ADA Wheelchair Seats	Rail Line Utilization
Shoreliner Push-Pull Coach	10	8 - Cab Coach Only	Connecticut Commuter Rail Shore Line East
Pullman Standard Push-Pull Coach	10	6 - Cab Coach Only	Connecticut Commuter Rail Shore Line East
Constitution Liner Push-Pull Coach	11	12 - All Coaches	Connecticut Commuter Rail Shore Line East
F-7M Diesel Electric Locomotive	2	N/A	Connecticut Commuter Rail Shore Line East
GP38 Diesel Electric Locomotive	2	N/A	Connecticut Commuter Rail Shore Line East
GP7W Diesel Electric Locomotive	1	N/A	Connecticut Commuter Rail Shore Line East
GP40-211 Diesel Electric Locomotive	6	N/A	Connecticut Commuter Rail Shore Line East
TOTAL SHORE LINE EAST UNITS: 42			
Pullman Standard Coach	6		Leased to the City of Danbury and Falls Village-Canaan Historical Society
TOTAL UNITS OWNED BY CDOT: 320			

The coach fleet consists of 42 vehicles, all single-level configuration. The Bombardier coaches (termed “Shoreliners”) are similar in design to the MBTA’s Bombardier coaches. It should be noted, however, that only the control cars (termed cab coaches by Connecticut DOT) are handicapped accessible. Notable are the “Constitution Liner” coaches which were originally constructed as self propelled vehicles (SPV – 2000), subsequently de-motored and converted to a standard trailer coach design. These vehicles have an outside design akin to the tubular Amtrak coach appearance. Trainsets consist of three coaches. “Shoreliner” and “Constitution Liner” coaches operate in pure trainsets and are not intermingled.

Door control is manual, with the exception of the Bombardier coaches. “Constitution Liner” and “Shoreliner” cab coaches are equipped with restrooms.

Exterior markings of the locomotives and coaches are based on the former New Haven Railroad’s paint scheme. Passenger coaches are lettered for the “Connecticut Department of Transportation” and the “Shoreliner” coaches are named for Connecticut locales and personages in prominent lettering below the windows. By intent, these vehicles are intended to be recognized as “Connecticut” products as distinguished from the adjacent New York Metro-North Railroad operation which extends westward from New Haven. Locomotive hauled coaches used on diesel powered services on the Metro-North/New Haven Line are compatible with Shore Line East equipment, but for organizational and budgetary reasons the coaches are not deemed to be interchangeable between SLE and New Haven Line operations.

3.6 Rhode Island DOT Stand-Alone Service

If the selected service plan provides for a separate RIDOT operation, then the selected operator presumably would provide equipment which is compatible with the operating principles of the neighboring SLE and MBTA services. Were the State of Rhode Island to procure its own equipment, either by purchase or lease, compatibility with the SLE or MBTA fleets would provide the State a potential lessor or purchaser, in the event that the RIDOT service were to be withdrawn. Florida's Tri-County Commuter Rail Service (Tri-Rail) procured bi-level coaches of a design akin to Toronto's GO Transit fleet, thereby providing a likely purchaser if the service were discontinued.

One possible option for consideration is the use of self-propelled rail cars which are not used on SLE or MBTA services at present. The MBTA has evidenced some interest in using such vehicles on shorter runs on both its northside and southside services.

Diesel multiple unit railcars (DMU's) achieved peak usage in the United States during the 1950's – 1960's by virtue of the Budd Company's rail diesel car (RDC) or simply "Budd Car". An attempt to revive the genre by means of the Budd Company's Self – Propelled Vehicle (SPV – 2000) in the late 1970's was largely unsuccessful. The previously noted SLE Constitution Liners were originally constructed as SPV-2000 models. Several factors contributed to the failed comeback.

The newly developed ability to operate diesel locomotive powered trainsets in push pull mode obviates the need to turn the equipment/locomotives at the end of the line thereby matching the DMU's bi-directional capabilities. The DMU is considered a "locomotive" and is subject to Federal Railroad Administration service and inspection cycles. Finally, the interior exhaust ductwork necessitated by the underflow engine reduces critically needed seating capacity to between 85 – 100 passengers, on average.

Studies performed by the Budd Company indicated that the SPV – 2000 vehicles were cost competitive with a two or three car diesel locomotive – hauled trainset, but were not competitive in longer trains.

Some DMU's of European design have recently been marketed within the United States as a result of perceived interest in "regional" rail line start – ups. An Adtranz three unit "Flexliner" tested on portions of the MBTA system in 1997. Some of these DMU's, while lightweight and attractively styled, do not satisfy Federal Railroad Administration (FRA) collision/buffing strength requirements for use on rail lines with freight traffic, and thus would be unsuited for operation on the Northeast Corridor. Some manufacturers have developed North American – compatible DMU designs, although no operator has yet committed to an order.

If RIDOT opts to implement a stand alone service, it may be possible to utilize FRA – approved DMU equipment – particularly if a manufacturer can be encouraged to provide vehicles as a demonstration. Again, this would be incompatible with current SLE and MBTA operations.

Finally, it should be noted that some of the 1950's era RDC's continue to operate in service (Syracuse and recently Dallas) – their longevity being attributed in part to their stainless steel bodies. However, the cost involved in rehabilitating such vehicles, the scarcity of parts and the need to provide Americans with Disabilities Act (ADA) compliant interiors would tend to argue against such consideration for a high volume service operating on the Northeast Corridor.

3.7 *SCCRS Railroad Equipment Requirements*

Railroad passenger service is proposed to use bi-level coaches, with seating on upper and lower levels accessed by stairs, and with limited seating and wheelchair tie-down locations at a mid-level position at platform level. This is standard per the neighboring Massachusetts Bay Transportation Authority design.

Seating capacities are 185 passengers for a so-called "blind" trailer coach and 175 passengers for a "control" trailer coach. The latter provides operating controls in the end vestibule location for use in push-pull train operations.

Total daily ridership for the project has been estimated as follows:

- Year 2000 (Start-Up) 4958 two way 2480 one way
- Year 2010 (Mid-Point) 5276 two way 2638 one way
- Year 2020 (Horizon) 5830 two way 2915 one way

Year 2010 represents an approximate 6.4 percent increase in passenger activity over Year 2000. Year 2020 represents a growth factor of one percent per annum from 2010.

It is assumed that the directional, commuter-oriented nature of this service will result in all passengers traveling inbound from Westerly to Providence in the A.M. returning from Providence outbound in the P.M. Therefore, the vehicle requirements are based on accommodating the daily one-way ridership. As a matter of terminology, the terms inbound and outbound are used although it should be noted that conventional railroad nomenclature would identify inbound as eastward and outbound as westward. Trainset configurations will depend on the number of trains operated and behavioral factors such as ridership peaks (termed "shoulders") within the commuting period. The larger trainsets would presumably be assigned to the schedules that experience the commuting peak or "shoulder". An allowance for 10 percent standees (maximum) has been used.

For the purposes of this operational analysis, it has been assumed that the total one-way directional ridership will be split among five trains as follows, yielding the accompanying passenger loads:

<u>Train Ridership Allocation</u>		<u>Year 2000 Passengers</u>	<u>Year 2020 Passengers</u>
First train	10%	248	292
Second train	20%	496	583
Third train	30%	744	874
Fourth train	20%	496	583
Fifth train	<u>20%</u>	<u>496</u>	<u>583</u>
TOTALS	100%	2480	2915

Three service alternatives have been developed for this project. As a result of differing operational considerations railroad vehicle requirements (quantities) will vary among alternatives, even though ridership is assumed to be the same for all alternatives. Equipment quantities have been estimated based on a mathematical and graphical analysis of individual train schedules and track capacity, termed "stringlines". Stringline graphs and preliminary timetables are included in the Appendix to this Report. Requirements for "spare equipment" (to account for programmed maintenance, inspection and repairs) have been estimated using the consultant team's professional judgment and experience.

Alternative 1 (A and B) Rhode Island “Stand-Alone” Service

The schedule analysis provides five peak period (inbound A.M. and outbound P.M.) trains requiring three sets of equipment ("trainsets"). The first two trainsets are scheduled to make reverse direction (outbound A.M. and inbound P.M.) trips to enable them to cover the last two of the peak direction trains.

To accommodate the **Year 2000** ridership, the three trainsets are proposed to be composed of:

- Two sets of two blind coaches and one control coach providing 545 seats each.
- One set of three blind coaches and one control coach providing 730 seats.

The first two sets of equipment would be used to cover two peak period trips each. This would provide a total one-way seated capacity of:

$$[4 \times 545] \text{ plus } [1 \times 730] = \mathbf{2910 \text{ seated passengers.}}$$

For the horizon **Year 2020** ridership, the following trainsets would be required:

- Two sets of two blind coaches and one control coach providing 545 seats each.
- One set of four blind coaches and one control coach providing 915 seats.

Again, two sets of equipment would provide reverse direction trips and then cover the fourth and fifth peak direction trips. This would provide a total one-way capacity of **3095 seated passengers**. It is an indication of the flexibility and capacity of the bi-level equipment that Year 2020 ridership can be accommodated by one additional coach.

Locomotives are assumed to be assigned one to each trainset utilizing standard design diesel locomotives (3000 to 4000 horsepower range) equipped with head-end power units.

Daily equipment requirements for **Year 2000** would thus be:

Trainsets	7 blind coaches;	3 control coaches	3 locomotives
plus Spares	<u>2 blind coaches</u>	<u>1 control coach</u>	<u>1 locomotive</u>
Total	9 blind coaches	4 control coaches	4 locomotives

Daily equipment requirements for **Year 2020** would thus be:

Trainsets	8 blind coaches	3 control coaches	3 locomotives
plus Spares	<u>2 blind coaches</u>	<u>1 control coach</u>	<u>1 locomotive</u>
Total	10 blind coaches	4 control coaches	4 locomotives

Alternative 2 Connecticut DOT Service Extension

Schedule analysis has yielded five peak direction trips with no ability to schedule a reverse direction trip. Therefore, five trainsets are required and the following trainset sizes are proposed.

For the **Year 2000**:

- One set of three blind coaches and one control coach providing 730 seats.
- One set of one blind coach and one control coach providing 360 seats.
- Three sets of two blind coaches and one control coach providing 545 seats each.

This would provide a total one-way capacity of **2725 seated passengers**.

For the horizon **Year 2020** the following trainsets would be required:

- One set of four blind coaches and one control coach providing 915 seats.
- One set of one blind coach and one control coach providing 360 seats.
- Three sets of two blind coaches and one control coach providing 545 seats each.

This would provide a total one-way capacity of **2910 seated passengers**.

Daily equipment requirements for the **Year 2000** would thus be:

Trainsets	10 blind coaches	5 control coaches	5 locomotives
plus Spares	<u>2 blind coaches</u>	<u>1 control coach</u>	<u>1 locomotive</u>
Total	12 blind coaches	6 control coaches	6 locomotives

Daily equipment requirements for the **Year 2020** would be:

Trainsets	11 blind coaches	5 control coaches	5 locomotives
plus Spares	<u>3 blind coaches</u>	<u>1 control coach</u>	<u>1 locomotive</u>
Total	14 blind coaches	6 control coaches	6 locomotives

Alternative 3 MBTA Service Extension

Schedule analysis indicates that five peak direction trips could be covered by existing MBTA trains, with the exception of needing a new set of equipment for MBTA Train No. 806. MBTA trainsets are sized for ridership between Providence/Attleboro and Boston, which is significantly greater than anticipated ridership between Westerly and Providence. Due to seating and standee concerns on existing MBTA Providence/Attleboro Line trains, the equipment estimate includes additional coaches for selected MBTA trains to mitigate potential concerns for some Westerly-Providence riders continuing on to Boston, thereby remaining on the trains east of Providence. However, it should be noted that the available ridership analysis does not specifically identify such passengers.

Spare capacity has not been included in the MBTA estimates since it is assumed that contractual arrangements could provide spare capacity from the MBTA equipment pool, which presently consists of approximately 90 locomotives and 360 coaches.

Additional equipment requirements for MBTA service extension in **Year 2000** would be:

New Trainset			
Train 806	7 blind coaches	1 control coach	1 locomotive
Augmented Trainsets			
Train 802	1 blind coach		
Train 804	2 blind coaches		1 locomotive*
Train 808	1 blind coach		
Total:	11 blind coaches	1 control coach	2 locomotives

**a new 4000 horsepower locomotive is assumed to be required for Train No. 804 since additional coaches may exceed the tractive capacity of the presently-assigned single locomotive. The presently assigned locomotive would be assigned to the new Train 806 or to the spare equipment pool. It has been assumed that the locomotive would be assigned to the spare equipment pool, and therefore a new locomotive purchase is also included for Train 806, but no spare locomotives are shown purchased in the capital budget.*

For **Year 2020** additional equipment requirements reflect the need for further augmentation of existing MBTA trainsets.

New Trainset			
Train 806	7 blind coaches	1 control coach	1 locomotive
Augmented Trainsets			
Train 802	2 blind coaches		
Train 804	2 blind coaches		1 locomotive*
Train 808	2 blind coaches		
Total:	13 blind coaches	1 control coach	2 locomotives

**(see previous note)*

3.8 Equipment Identification

The State of Rhode Island has had little experience with ownership of railroad equipment and the implementation of a service logo or identification. During the Penn Central divestiture of commuter rail operations on the southside in the 1970's the State of Rhode Island took title to several former Pennsylvania Railroad P-70 coaches to which were affixed state seals along the window band.

Upon its formation in 1966, the Rhode Island Public Transit Authority adopted a "Rhode Runner" identification graphic for its bus fleet as part of its then new marketing and service image. The identification was discontinued in the early 1980's in favor of the present "TA" logo. Presumably, the introduction of passenger service which will serve intra-state passengers as well as interstate trips to adjacent Connecticut or Massachusetts, would merit adoption of a service logo associated with the State of Rhode Island, to be applied to the vehicles.

While it is not the purpose of this report to develop an advertising and marketing plan, it should be noted that Connecticut DOT assigned names to its Shoreliner coaches based on solicitation of submittals from the general public. This was part of a campaign to promote awareness of both the Shore Line East service and the arrival of new coaches.

SECTION 4.0 FINANCIAL ANALYSIS

4.1 Introduction

Purpose of Financial Analysis

The Rhode Island Department of Transportation (RIDOT) has proposed the establishment of commuter rail service from Westerly to Providence, Rhode Island using the existing Amtrak Northeast Corridor (NEC) tracks. The proposed service would connect with existing service from Providence to Boston, and is expected to primarily serve Rhode Island residents who commute daily into Providence or Boston. Implementation of the South County Commuter Rail Service (SCCRS) hinges on a sound financial plan which identifies funds to cover the construction, operation and maintenance of the rail facilities. This financial analysis and proposed financial plan consist of:

- Examination of existing and potential funding sources;
- Development of a feasible financial plan for all commuter rail alternatives;
- Demonstration of financial cash flows for each alternative, based on the proposed financial plan that details projected expenses and revenues over a 27-year horizon;
- Evaluation of the financial feasibility of each of the SCCRCS alternative operating plans; and
- Comparison of alternative financial plans for a preferred alternative.

Project Description

- ***Roles and Responsibilities of Associated Transportation Agencies***

RIDOT and the Rhode Island Public Transit Authority (RIPTA) share responsibility for the state's surface transportation system. RIDOT constructs, operates and maintains the major roads in the state, while RIPTA operates a state-wide transit system with over 220 buses. In addition, the Rhode Island Turnpike and Bridge Authority (RITBA) manages the maintenance and operation of two toll bridges; the Pell and Mount Hope Bridges. Another major player in Rhode Island's surface transportation system is the Massachusetts Bay Transportation Authority (MBTA) which provides commuter rail service between Providence and Boston with Amtrak as the contracted operator. Although Rhode Island receives its own federal apportionments, Rhode Island must share some of its "urban formula" funds with Massachusetts for the urbanized areas. Therefore, Rhode Island must negotiate with Massachusetts each year to receive its portion of these funds. In addition, MBTA and RIDOT currently have a contract which stipulates that RIDOT will provide some of its federal funds (from the Federal Transit Administration) for the development of a train layover facility at Pawtucket and in return MBTA will provide commuter rail service from Providence to Boston. The layover facility at Pawtucket has been earmarked as a "New Start" project under TEA-21.

- ***Definition of South County Commuter Rail Alternatives***

RIDOT's proposed rail service would run between Westerly and Providence in the existing Amtrak right-of-way with a start year 2000. The SCCRS alternatives are defined by the following three operating arrangements:

- **Alternative 1A & B:** In the first alternative, a RIDOT (possibly RIPTA) contractor would be responsible for securing operation services of five AM and five PM peak period trains. Passengers would have to transfer to MBTA trains at Providence due to the operator change in this alternative. Alternative 1A, with a RIDOT contractor, would include an overnight layover at the planned MBTA/RIDOT facility in Pawtucket. Alternative 1B would include a layover at a new facility to be built in Westerly.
- **Alternative 2:** In the second alternative, the Connecticut Department of Transportation (ConnDOT) would operate the service from Westerly to Providence with passengers transferring at Providence to complete their trip to Boston on the MBTA rail system. Alternative 2 is a north-westerly extension of the current Shore Line East service from New Haven to New London with five AM and PM trains. Amtrak is under contract to provide service for the ConnDOT.
- **Alternative 3:** The third alternative consists of an extension of the MBTA line from Westerly to Providence with five AM and PM trains. Alternative 3 would provide riders a "one-seat" ride from Westerly to Boston without having to transfer anywhere along the line. Amtrak is currently under contract with MBTA to provide the existing service from Providence to Massachusetts.
- **Alternative 3A:** This is a variation on Alternative 3 in which the MBTA service is incrementally extended south from Providence to serve Warwick and Wickford Junction only.

- ***Funding Needs***

It is important to note throughout the financial plan discussion that RIDOT is the project sponsor and is ultimately responsible for identifying funds for the SCCRS. However, RIDOT is restricted in some areas of funding such as debt financing, so for certain funding strategies the State of Rhode Island may need to take the lead for funding this project. In the following discussion, RIDOT is recognized in circumstances where the agency could take the lead on the project funding and Rhode Island is identified in situations where the state government would need to be responsible.

RIDOT will incur two types of costs to pay for the SCCRS: 1) the initial capital costs necessary to begin service on the system and 2) ongoing operation and maintenance costs (O&M). The capital costs for each alternative are listed on the next page:

**Table 4.1.1
SCCRS Capital Costs**

Alternative	Stations	Other Facilities	Capital Costs	Vehicle Requirements (Rolling Stock)
1A (RIDOT Contractor)	1) New station at Wickford Junction 2) Minimal facility at Warwick	1) Pawtucket Layover Facility	\$59.3 Million	For year 2000: 9 blind coaches, 4 control coaches, and 4 locomotives. One additional blind coach will be needed by year 2020.
1B (RIDOT Contractor)	1) New station at Wickford Junction 2) Minimal facility at Warwick	1) Westerly Layover Facility 2) Northup Avenue Layup Track	\$64.9 Million	For year 2000: 9 blind coaches, 4 control coaches, and 4 locomotives. One additional blind coach will be needed by year 2020.
2 (ConnDOT as operator)	1) New station at Wickford Junction 2) Minimal facility at Warwick	1) Westerly Layover Facility 2) Northup Avenue Layup Track	\$81.8 Million	For year 2000: 12 blind coaches, 6 control coaches, and 6 locomotives. An additional 2 blind coaches will be needed by year 2020.
3 (MBTA as operator)	1) New station at Wickford Junction 2) Minimal facility at Warwick	1) Pawtucket Layover Facility	\$50.5 Million	For year 2000: 11 blind coaches, 1 control coaches, and 2 locomotives. An additional 2 blind coaches will be needed by year 2020.
3A (MBTA as operator)	1) New station at Wickford Junction 2) Minimal facility at Warwick	N/A	\$31.1 Million	For year 2000: 5 blind coaches

O&M costs include everything necessary to keep the commuter rail running from fuel costs to track usage fees paid to Amtrak, and specific costs are listed in the Appendix. A major difference between the O&M costs is due to the location of the layover facility. Alternatives (1A & 3) utilizing the Pawtucket layover facility would incur greater costs due the extra deadhead miles (miles without passengers/fares) the trains would travel to access this layover facility. Pawtucket is located beyond the proposed rail route between Westerly and Providence. Those alternatives with the Westerly layover facility have lower O&M costs as the trains would have less deadhead miles, but higher capital costs for the construction of the Westerly facility. Before any recommendations can be made regarding the funding the capital and O&M costs of the SCCR, an understanding of Rhode Island's economy and financial conditions is necessary.

4.2 Rhode Island Financial Condition

It is important to look at Rhode Island's economic performance because some funding strategies such as debt financing may need to meet certain investment requirements. In the past couple of years, Rhode Island's economy has rebounded from an economic recession in the early 1990s, but growth rates are still below the national average. This lower than average growth rate and a relatively slow economy is coupled with high taxes. Rhode Island's base sales tax rate of 7% is currently tied with Mississippi as the highest in the nation. The state gasoline taxes rank as second highest in the nation at \$0.28 per gallon, behind Connecticut's \$0.32 gas tax. In 1999, property taxes in Rhode Island ranked fifth in the nation. Although local governments collect property taxes and have the ability to tax at varying rates, the state does have the power to limit property tax rates.

The FY 1999 state budget supported reductions in property taxes, as well as the local excise tax on vehicles (equivalent to a personal property tax). The vehicle excise tax is planned to be phased out over time, but is subject to an annual review by the governor, who assesses the affordability of phasing-out this tax on the state budget. As Rhode Island's 39 cities and towns collect the excise tax for local services, the removal of this tax will have quite an impact on local budgets. The state has agreed to reimburse the cities and towns for this lost revenue source from the general fund as the excise tax is phased-out. The FY 2002 Budget has frozen the exemption level of the local excise tax on vehicles at \$3,500 with an annual inflationary component added to the annual state payment to the cities and towns.

In recent years, Rhode Island has relied heavily on the sale of bonds to fund capital projects. Thus debt, as a percent of personal income, rose from 2.4% in 1984 to 8.5% in 1994. This increase in debt service, as a percent of personal income, brought Rhode Island's debt rank up to third in the nation. The Governor would like to reduce this percentage to approximately 4.4% in 2006 and has strongly recommended a "pay-as-you-go" system for funding capital projects. However, the FY 2001 and 2002 Capital Budget recommends issuance of \$60 million in new general obligation bonds for transportation purposes, and although Rhode Island's debt is not limited by a statutory threshold of debt capacity, voters must approve any debt over \$50,000.

Rhode Island's net tax supported debt is projected to decline to \$1.7 billion by 2006, down from \$1.9 billion in 1994, reducing the net tax supported debt as a percent of personal income to 4.36% by 2006 as well. In spite of the large debt burden, the state has consistently worked to maintain relatively good bond ratings. In fact, Rhode Island recently came close to having its bond rating from Moody's Investors Services upgraded from A1 to A3, but even in its current status it is still considered investment quality. In addition, Moody's Investors Services recognized Rhode Island economic initiatives, which include tax incentives and the continued expansion of the T.F. Green Airport (which has experienced dramatic passenger growth with its initial improvements) and expects the rating will go up if these trends continue in the state.

Rhode Island Economic Indicators

If RIDOT opts to use debt financing via bonds to finance the SCCRS, the state's economy and current debt burden would likely be scrutinized by bond rating agencies. The following discussion describes the population in Rhode Island, as well as personal income and employment trends which would likely be part of an analysis for debt financing of the SCCRS.

- ***Population and Demographics***

Although the population of Rhode Island was projected to decline between 1990 and 2000, the recent US Census 2000 reports show that Rhode Island's population actually increased from 1990 to 2000 by a total of 4.5%. In 1995, the US Census produced population projections out to 2025, in which Rhode Island has a total growth of 14% from the year 2000 to 2025. However, using the higher population findings for 2000, total growth is projected to be just under 9%.

The State of Rhode Island anticipates that the state population will grow by nearly 1% each year from 2010 to 2020. The number of persons aged 15 to 64 (working age) is expected to peak in 2010, while the number persons 65 years and older is expected to rise sharply between 2010 and 2020. These trends highlight the changing demographics not only in Rhode Island, but across the nation.

- ***Personal Income***

Personal income has remained strong in Rhode Island. Both real and nominal personal income levels and growth rates in Rhode Island have slightly outpaced national averages in the past five years. When real personal income is growing, a region's economy is growing and considered to be generally healthy. The median income for a four-person family is also slightly above the national average.

- ***Employment***

Employment in Rhode Island began to grow in 1994 after decreases in previous years. Although Rhode Island, like other states, has experienced declining manufacturing employment, all other sectors have seen recent growth. The services industry employs more than any other in Rhode Island, and this sector has grown by 12.3 percent since 1987.

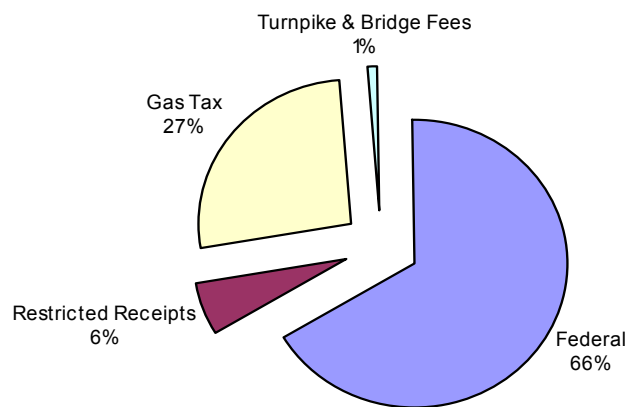
Summary

Rhode Island's economic conditions play an important role in determining a funding package for SCCRS, particularly the combination of funds. Typically projects are funded with some mixture of federal, state, local and private sources. With a strong economy, private developers may have more of an interest in joint development opportunities along the SCCRS, so the percentage of private funds may increase for the project. Furthermore, a state's bond rating is linked to the state's economy, so Rhode Island may receive a better bond rating with a strong economy and be able to issue bonds with lower interest rates. Building upon the economic conditions, the next section generally describes the major categories of transportation funding in Rhode Island.

4.3 Overview of Transportation Funding

The following discussion focuses on three major funding sources for transportation projects: 1) federal funds, 2) state funds and 3) public-private partnerships, and Rhode Island's relationship with each. The following chart shows RIDOT budget sources for the year 2000. Federal apportionments and monies from the gas tax comprise the majority of RIDOT's budget sources.

Figure 4.3.1
2000 RIDOT Budget Sources



Federal Funds

This section describes these major funding categories beginning with the federal sources. The Transportation Equity Act for the 21st Century (TEA-21) renewed the federal government's commitment to a multi-modal transportation system which includes funds for public transportation projects such as the SCCRS.

The State of Rhode Island has relied heavily on federal funds to pay for its transit and highway capital projects. As shown above, about 66% of the year 2000 transportation budget for RIDOT originated from the federal government. Depending heavily on these funds can be dangerous as the level of federal funding may decrease in the future. Fortunately under TEA-21, the average annual apportionment for Rhode Island has increased over the predecessor funding package (with a 47.2% increase overall) and the state maintains its recipient status, that is, the state receives more federal funds than its citizens contribute via the federal fuel tax. If one were to rank states from 1957 to 1995 based on the amount of funds they received from the Highway Trust Fund Account, Rhode Island would be fifth in line among recipients. Many states are interested in equalizing this relationship between donors and recipients, so Rhode Island's favorable status for federal funds could change in the future.

Two of the main federal funding sources are apportionments, which are determined by formula, and discretionary funds, which are allocated on competitive basis. These funds generally require a minimum of a 20% match from the state, local government, or in some cases, a private investor. The apportioned highway funds will provide Rhode Island a total of at least \$155 million annually from 1998 to 2003. The majority of these funds are categorized by use, as shown in the following table.

Table 4.3.1
Average Annual Funding by Category 1998-2003
(\$ in thousands)

Category	Interstate Maintenance /National Highway System	Surface Transp. Program	Bridge	Congestion Mitigation	Recreation Trails	Metro Planning	High Priority	Minimum Guarantee
Abbreviation	IM/NHS	STP	Bridge	CMAQ	N/A	N/A	N/A	N/A
Total	\$52,618	\$33,897	\$33,644	\$8,842	\$484	\$937	\$4,799	\$21,585

The actual federal apportionments received by Rhode Island between 1998 and 2001 are shown in Table 4.3.2 (below).

Table 4.3.2
Actual Apportionments by Category 1998-2001
(\$ in thousands)

Year	Interstate Maint./Nat'l Highway System	Surface Transp. Program	Bridge	CMAQ	Recreation Trails	Metro Planning	High Priority	Minimum Guarantee	Total
1998	\$45,713	\$29,347	\$23,121	\$8,193	\$331	\$812	\$3,167	\$23,819	\$134,503
1999	\$52,486	\$33,860	\$33,855	\$9,667	\$442	\$931	\$4,319	\$21,664	\$157,224
2000	\$53,954	\$34,802	\$26,801	\$9,481	\$552	\$944	\$5,183	\$26,565	\$158,282
2001	\$59,136	\$38,135	\$42,871	\$9,304	\$527	\$963	\$5,541	\$20,423	\$176,900

The federal government provides a degree of flexibility with these funding categories. For instance, up to 50% of the NHS apportionments may be transferred to IM, STP, CMAQ, and/or the Bridge Program. (Information on sources that RIDOT could use for the SCCRS is provided in a later section of this report.) The federal government also offers loans and will serve as a guarantee on debt issued by local and state governments under the Transportation Infrastructure Finance and Innovations Act, but a project must exceed \$100 million or 50 percent of a state's annual apportionment of Federal aid funds. It does not appear that the SCCRS will meet those criteria given its project costs.

State Funds

Transportation funding in Rhode Island comes from a variety of sources, but the major sources of state revenue have come from the gasoline tax and the issuance of bonds in the recent past. Currently, the gasoline tax is a considerable contributor of transportation funding. However the Governor has strongly endorsed a move away from bond financing, likely reducing this sources contribution in the future. Special appropriations have provided small amounts of funding for specific projects in the past and may continue to do so in the future. Lastly, tolls have been collected on the Mount Hope and Pell Bridges (tolls on the Pell Bridge have recently been phased out) and are used for the ongoing bridge maintenance and operation. However, with the recent removal of the Pell Bridge toll this funding source has been diminished. As shown in the FY 2002 Budget, an increasing amount of state funding is coming from the restricted receipts source.

Rhode Island has relied extensively on debt financing to pay for transportation projects, but as stated previously they are now trying to move away from bonding to a pay-as-you-go system. Government agencies typically use two types of municipal debt financing: (1) general obligation bonds and (2) revenue bonds. Bonds are typically used for capital investments because debt financing for O&M costs can be risky if voters

need to periodically approve new bonds as is the case in Rhode Island. Furthermore, Rhode Island has found it more difficult to find funds for O&M than for capital costs, and borrowing funds without a dedicated cash flow for repayment can create a situation where the state is required to issue more bonds to pay for past debt service. General obligation bonds are backed by the full faith and credit of the issuing state and/or local government. On the other hand, revenue bonds are payable from dedicated sources of revenue from users fees and are not backed by the full faith and credit of issuer. Revenue bonds generally have a higher interest rate to reflect the increased risk. General obligation and revenue municipal bonds typically provide a lower cost of borrowing over bonds from the private sector due to their tax-exempt status.

Public-Private Partnerships

Public-private partnerships can include a number of different possibilities, but in all cases the private sector investment is compensated with some sort of benefit or revenue generated from the transportation project. Often investors are interested in providing funding for capital investments in exchange for the opportunity to recoup their costs and a fair rate of return through some sort of user charges or lease payments. For instance, a developer may be interested in jointly developing a rail station with parking facilities, and charging a parking fee to recover the associated costs. Another public-private option is to charge an assessment fee on properties that receive a benefit from the transportation project. More details on possible public-private partnerships will be outlined in the following section.

Summary

Based on the economic conditions and past transportation funding trends in Rhode Island, a funding plan can be developed for the SCCRS. Similar to buying house, the financial plan for Rhode Island includes both financing (e.g., cash or debt financing) and the actual source of the money used to pay for all or part of the purchase (e.g., savings account). The previous discussion suggests that Rhode Island will need funding beyond the current sources. The next section examines a variety of common funding mechanisms detailing both the challenges and opportunities for using each in Rhode Island.

4.4 Funding Mechanisms for Rhode Island

Current sources of transportation funding in Rhode Island will not be adequate to pay for 100% of both the SCCRS's capital and operating costs without taking away from established services and facilities. As such, it is necessary to look not only at current sources but some more creative ways to generate and/or match federal and state funds for this project. It is important to note throughout the discussion on funding opportunities that two types of funding are needed for this project: 1) revenue for the initial capital investment and 2) revenue to support the O&M of the rail. Some sources of revenue may only be applicable for initial capital investments; others may be more appropriate for both capital and O&M costs.

The State of Rhode Island has developed a statewide plan for transportation called *Transportation 2020: Ground Transportation Plan* which includes the following priorities for the financing of transportation projects:

- Convert the gasoline tax to a user fee (essentially dedicate all gas tax revenues to transportation);
- Phase out the use of general obligation bonds for all but large capital projects;

- Set a new target for transit revenues by charging fares for all services and adjusting fares to reach a 35% farebox recovery ratio;
- Consider tolls as another form of user fee where feasible;
- Find additional financing sources and mechanisms; and
- Clarify and publicize the priorities of transportation investments.

These objectives as defined by Rhode Island should be a part of any financing strategies for the development of the SCCRS.

Financing Methods

To begin with, Rhode Island should look at ways to actually finance the system, and the state could use three common techniques: 1) Cash or “Pay-As-You-Go” Financing; 2) Debt Financing; or 3) Public-Private Partnerships. Given the magnitude of this project, Rhode Island may end up applying a combination of all three methods.

- ***Cash or “Pay-As-You-Go” Financing***

In this financing method, Rhode Island would use identified revenue sources or existing funds to pay for the costs of commuter rail, as incurred, without borrowing. The Governor of Rhode Island has strongly recommended that “pay-as-you go” financing be used for future capital projects. Because Rhode Island currently has not identified a source of funds to pay for the commuter rail, and one of the likely sources -- fare revenues -- would not be available until construction is complete, this technique may be best used in combination with others, including some level of debt financing. Options for Rhode Island to acquire cash or pay for the project as it is implemented include a dedicated tax and operating revenues, such as tolls or other facilities.

- ***Debt Financing***

Rhode Island has borrowed a significant amount of money in the past to pay for capital improvements. It would be not be in Rhode Island’s best interest to use debt financing as an ongoing source of funds for operating the rail system, rather operating revenue such as fares and parking charges should be used to pay for O&M costs. It is important to keep in mind that there are many creative options for debt financing which are detailed below, but Rhode Island will still need to identify and dedicate funds to repay the debt.

- ***Bonds***

Bonds are a common method of debt financing, and their proceeds serve as a major source of funds for transportation in Rhode Island. RIDOT *cannot* issue bonds directly; however the state of Rhode Island can issue general obligation bonds for transportation projects. In the past, the lack of a dedicated transportation fund and consistent appropriations from the General Fund, caused Rhode Island’s relationship with bonding to be cyclical. Rhode Island is taking steps to dedicate the gas tax to transportation funding by the year 2003, which should stabilize current revenue for transportation.

However, it is likely that they will continue to leverage these dedicated funds with bond financing. In FY 1999 debt service on capital improvement projects consumed 13% of total state transportation expenditures. It is likely that debt service on existing and future bonds will continue to consume a significant portion of state transportation funding for the foreseeable future.

As noted, the state plans to lower its ratio of debt to personal income, but without bonds Rhode Island would have a difficult time coming up with the necessary match to secure their federal funds. Given the state's debt, Rhode Island's best option may be to borrow a small amount to fund the commuter rail project as leverage to secure additional federal funds. Table 4.4.1 lists the proposed transportation bond sales to match approximately \$180 million annually in federal transportation funds through the year 2007.

Table 4.4.1
Proposed Bond Issuance for Transportation
Source: FY 2002 Capital Budget

Fiscal Year	Bond Amount
2001	\$30,000,000
2002	\$30,000,000
2003	\$30,000,000
2004	\$30,000,000
2005	\$30,000,000
2006	\$30,000,000
2007	\$30,000,000

- ***State Infrastructure Bank***

A more innovative form of debt financing would be for Rhode Island to explore the State Infrastructure Bank (SIB) program for funding of the commuter rail. The SIB program was first established under ISTEA, and Rhode Island became eligible under TEA-21. This program allows Rhode Island to loan its federal funds to a public or private party interested in sponsoring the rail development. RIDOT would need to provide a 25% local match to any federal funds used as part of the SIB. The SIB could offer below-market rate loans, interest rate buy-downs, and credit assistance. In addition, the timing of loan payments can be structured so that payments are deferred until the project was able to yield income. The SIB program offers Rhode Island a great opportunity to explore the development of the commuter rail with the private sector as a project sponsor, particularly because RIDOT is currently not able to make loans to the private sector or other public agencies. The state's current SIB includes a one-time federal allocation of \$1.5 million above and beyond their TEA-21 funds. RIDOT will recycle funds by borrowing SIB funds matched with state bond funds for small improvement projects, repaying them to the SIB with gas tax revenues or another revenue source, and then using the repaid money for other transportation projects. The main obstacle to using a SIB for the SCCRS is identifying funds to actually pay the SIB back.

In addition, Rhode Island can use other federal funds (from NHS, STP not including safety and enhancement, among others) as part of the SIB, as long as the state provides the necessary 25% match. The federal government encourages states to use a dedicated revenue source for repayment to the SIB; however, a state can use future federal apportionments as repayment to accelerate a project. Because the SIB program is a pilot project, Rhode Island should act quickly to use the SIB for commuter rail before the proposed ending date of the program in the year 2003. It is notable that federal aid requirements are applied to all SIB activities including repayments from non-federal sources. In addition, FHWA recommends that each state contact their bond counsel regarding the tax exempt status of any bonds issued through a SIB program.

- ***63-20 Corporation***

The development a 63-20 corporation could facilitate the private financing participation in the SCCRS. Basically, a 63-20 corporation is a public-private partnership where the private entity acts on behalf of a government body to issue tax-exempt bonds for infrastructure projects such as the SCCRS under the provision of the IRS Revenue Ruling 63-20. The 63-20 corporation must be non-profit and issue bonds for projects that provide a public benefit. If Rhode Island were to contract with a private party for implementation and operation of the SCCRS, the formation of a 63-20 corporation may help entice a private party and given the lower borrowing costs under this type of arrangement. In the past, 63-20 corporations have leased infrastructure to the applicable government body and relinquished ownership upon maturity of bond debts. Amtrak should be included in the development of a 63-20 corporation as a partner or at least to be part of any negotiations, specifically those costs associated with using their tracks. The track usage fee may be higher for a private operator than public agencies such as ConnDOT and MBTA which already have agreements with Amtrak. A 63-20 corporation would allow Rhode Island to stagger payments for capital costs through lease payments without increasing the state's ratio of debt to personal income. Of course the state would still need to come up with the funds for any lease payments associated with the SCCRS.

- ***Advanced Construction***

Advanced construction would allow Rhode Island to finance the capital necessary to begin rail service under the Federal Transit Act (FTA) and National Highway System (NHS) Act. With advance construction, Rhode Island could basically begin construction with its own funds or short-term debt, while preserving eligibility for future federal funds. Eligibility means the federal government believes a project qualifies for federal aid, but no funds are yet committed to the project. Advance construction projects must be on the State Transportation Improvement Program (STIP), and NHS, STP and CMAQ projects among others are eligible for advanced construction. (Currently, the SCCRS is listed in the STIP as a project for study and development.) Except for NHS projects, candidates for advanced construction must meet one of the following criteria under the NHS Act:

- The State has obligated all the funds apportioned or allocated for a specific program;
- The State has used its obligation authority; or
- The State can demonstrate it will use its obligation authority before the end of the fiscal year.

MBTA used this process to finance improvements to the Boston Engine Terminal. MBTA was able to reconstruct the facility for 6 years, but finance it over 19 years through a series of steps:

- MBTA was responsible for project expenses and submitting receipts for reimbursement to FTA;

- MBTA took on short-term debt to cover the expenses not reimbursable by FTA;
 - MBTA issued general obligation bonds to retire the short-term debt;
 - FTA will cover up to 80% of the interest on the debt (not the principal).
- ***Transit Bonds***

RIPTA uses bond proceeds as the local match for federal funds on capital projects such as new buildings. In addition, RIPTA uses a Capital Revolving Loan Fund (which allows RIPTA to borrow money from itself) as a capital match for federal funds. Under TEA-21, transit agencies can issue bonds secured by transit system revenues, and use the proceeds from the bonds as a local match for any capital activities. At the end of the last decade, RIPTA was carrying a deficit of \$12 million and was trying to identify funds to cover operation costs (as TEA-21 funds can not be used for operational expenses). RIPTA expects to replace a majority of its bus fleet by mid-decade, though the agency has had problems coming up with the match for federal funds in the past. RIPTA plans to ask the Legislature for an additional one cent of the current 28 cent gasoline tax (which translates to about \$4.5 million dollars in revenue each year) increasing the transit agency's portion from 5 to 6 cents. If RIPTA gains approval of this funding, the agency has indicated it will not request funds from the Legislature for another four years. In response to this request, an additional 0.075 cents of the gasoline tax was transferred out of the General Fund, bringing RIPTA's share of the gasoline tax to 5.75 cents.

RIPTA is undertaking a major planning effort called Transit 2000 which includes an objective to eliminate and reduce underutilized routes which may help improve its financial picture. Nonetheless, revenue bonds may be a source of project funds for start-up costs, particularly if RIPTA takes the lead on this project as contractor to RIDOT. Fortunately, the transit revenue bond program under TEA-21 allows an agency to use fares from one mode (bus) to support capital development of another mode (rail). One stipulation of this program is that if an agency buys transit capital (e.g., 50 buses), they can not use the fares from these buses as revenue to secure bonds. So, RIPTA could issue a transit revenue bond secured by their bus fare revenues to match federal funds for the capital activities of SCCRS.

- ***Grant Anticipation Notes***

Grant Anticipation Notes (GANs) or Grant Anticipation Revenue Vehicle (GARVEE Bonds) are an instrument to speed up a project's timeline. GANs are short term notes that could be issued by Rhode Island in anticipation of grants from another government agency such the FTA, in which the principal and/or interest is basically repaid with future Federal funds. GANs are used to initiate construction or operation of a project prior to the actual receipt of federal funds. There are two ways the GARVEE bonds can be used:

- A direct GARVEE bond in which federal funds directly reimburse debt service paid to investors for a debt financed Federal-aid project;
- An indirect reimbursement in which federal funds reimburse expenditures on other Federal-aid projects, while a state Department of Transportation uses some of these funds to pay debt service on the debt-financed project. The debt-financed project does not need to be a Federal-aid project.

The State of Massachusetts used the indirect reimbursement strategy when it issued GANs totaling \$600 million for the reconstruction of the Central Artery (I-93) in downtown Boston and the extension of I-90 to Boston's Logan Airport via a new tunnel under the Boston Harbor. Massachusetts will pay the interest on the GANs from state highway funds, but retire the principal with Federal funds. Until 2005, the debt service payments will address only the interest, and after 2005, Massachusetts will begin to repay the principal. The typical steps for an indirect reimbursement are listed below.

- FHWA reimburses the state DOT for costs incurred on the Federal-aid project;
- Investors purchase bonds issued by state DOT; proceeds flow to state DOT;
- State DOT use bond proceeds to construct debt-financed project;
- State DOT passes through Federal reimbursements for pay-as-you-go projects as debt service payments to bond holders over a multi-year term.

- ***Tapered Match***

A tapered match is a tool that RIDOT could use to change the timing of federal payments under TEA-21. For instance, an agency with a multi-year implementation time period might choose to receive 100% of its federal funds in the first year of the project with no additional payments in later years. Tapering does not increase the amount of federal funds; rather it provides timing flexibility in receiving the funds. This strategy might not be applicable to the SCCRS because the project only has a one year capital investment time period.

- ***Public-Private Partnerships***

In recent years, the federal government along with state, local and private parties have begun to support innovative financing of transportation projects, particularly those that reduce vehicle miles traveled and support stronger land use connections with transportation. In fact the state has a stated goal to “find additional financing sources and mechanisms” for transportation. Furthermore, with the advent of ISTEA and its reauthorization through TEA-21, the federal government has auspiciously supported alternative financing and funding strategies.

- ***Leasing/Contract***

In this case, an investor could provide the capital to start up the commuter rail system for assets such as trains, and then lease the capital back to a government agency such as RIDOT. The investor receives revenues as lease payments from the government. The federal government allows federal funds to be used for this type of arrangement as long as the lease is more cost-effective than buying the capital. The benefit of this type of financing is that RIDOT would not need to take on a significant amount of debt to initiate rail service, however RIDOT would still need to identify a source of funding for the lease payments. RIDOT may have a difficult time finding a party to provide the upfront capital.

There are a couple other obstacles to leasing for this project which not necessarily insurmountable but are important to note. To begin, other agencies such MBTA or ConnDOT might be logical entities to lease from, but these agencies may not have extra funds to purchase equipment for the SCCRS.

Although, RIDOT could require a contractor to provide equipment as part of their service agreement, a contractor might not compete well against bigger operators such as Amtrak with more capital resources. Sometimes rail car manufacturers will provide “cutting-edge” equipment on a demonstration basis, but RIDOT needs to ensure compatibility with MBTA and/or ConnDOT.

- ***Turnkey***

Turnkey is not really a financing strategy, but it is more of a cost savings approach particularly applicable with leasing. Basically, a private entity would have the full responsibility for the project design and construction of any necessary facilities, and upon completion “turn the keys” over the responsible public agency. Because the plan for the SCCRS is to use existing railroad tracks, the primary responsibility of a contractor under this arrangement would be upgrading current stations and constructing new ones. The strategy lessens the financial risk for the public agency, and supports more innovative financing techniques such as leasing.

Under a turnkey arrangement, RIDOT could use the design-build concept. This “cost-savings” strategy has a couple of variations, including design-build-operate-maintain (DBOM). The basic idea is to use one contractor to design, build, and maintain/operate any new facilities for the commuter rail. DBOM can be cost-effective as a fixed fee is paid and time is saved as one contractor is responsible for the entire process. RIDOT should consult with the federal government to ensure any requirements are met for using federal funds with regard to a design-build process. If RIDOT were to utilize a turnkey arrangement for the construction of facilities for the SCCRS, the Department will need to coordinate with Amtrak particularly if the facilities are proposed to be on Amtrak property.

- ***Lease with Maintenance Contract***

This strategy builds upon a lease agreement by incorporating maintenance into the contract. The federal government allows federal funds to be used to lease transit equipment and facilities when the lease will be more cost-effective than purchasing the capital, and lease payments are made with federal and local matching funds. Recently, the New Orleans Regional Transit Authority (RTA) has gone a step further to establish a lease with maintenance contract. RTA incorporated maintenance as part of a capital lease with both activities eligible for Federal grant reimbursement. To develop a lease with maintenance contract, FTA requires that transit agencies demonstrate cost savings in two ways:

- A benefit-cost analysis shows that the lease is more cost-effective than the purchase.
- The maintenance component is more cost-effective than the maintenance by the agency’s own staff.

- ***Joint Development***

Joint development typically involves the lease of a government agency’s land near station locations. The federal government (specifically FTA) recently endorsed joint development by changing its policy to allow transit agencies to keep income from joint development on land acquired with federal funds. The federal government requires that joint development include transit, involve a private interest, and ensure the transit system is still easily accessible. Joint development must generate a revenue stream or a single payment which is greater than the fair market value based on the property’s present value. Beyond the few federal requirements, the benefit of joint development is the flexibility as there is no set template

for partnerships. There are many different variations of joint development which just need to be agreed upon by the interested developer and public entity. A state and a private interest could work together to jointly develop the new stations; however RIDOT does not own the land at two of the proposed sites for new station facilities at Warwick and Wickford Junction. RIDOT is pursuing an agreement with a developer and the Town of North Kingston for the Wickford Junction station, but these arrangements are not finalized, thus are not reflected in the cost estimates. RIDOT does own the property at Westerly and Kingston, but stations and parking lots already exist at these sites for current Amtrak services. RIDOT plans to use these stations “as-is” with some minor improvements and/or the addition of supporting facilities such as a layover facility. The current station plans somewhat preclude joint development for SCCRS, but RIDOT should look for any future development opportunities.

- ***Special Assessment Districts***

RIDOT could establish a special assessment district along the SCCRS line. A special assessment district is based on the benefit that properties receive from the improved transportation facility. Basically, a charge is assessed on real estate properties that receive the benefit of better transportation. The charge could be the same for all property owners within the designated district or graduated based on the distance from the rail stations. For instance, the 16th Street Benefit Assessment District in Denver, Colorado is divided into five benefit zones according to the distance from the transit mall (the 16th Street Transit Mall), reflecting the fact that benefits are related to proximity. Revenues from the assessment district are used to cover the debt service of the improvement. Often the charge is based on the square footage of land, and usually cannot be more than the cost of the improvement or the benefit to the property owners. At the present time, Rhode Island has not experimented with revenue generation through assessment districts and implementation would probably require legislation. Land zoned for residential use is generally exempt from the levies of these districts.

- ***Tax Increment Financing***

Tax increment districts obtain funds from increases in *ad valorem* tax revenues that arise from a new infrastructure project. Tax increment districts use the incremental increase in taxes (instead of charging additional fees like a special assessment district) over a designated time period to service debt or pay back other government agencies or private lenders. Basically, the revenues from increased property taxes due to the transportation improvement are diverted to pay back project costs. The incremental increase in tax revenues over a designated base year are diverted into a special fund, which can be used for debt service. Two factors may hinder this strategy in Rhode Island: 1) at this time, only local governments have authority for collecting property taxes and 2) local governments receive a great deal of state aid. Due to these conditions, it may not make sense politically for local governments to collect revenues for the SCCRS.

Sources of Funds

Identifying funding for both capital and O&M expenses of the SCCRS goes hand in hand with developing a financing plan. The previous section identified mechanisms to fund the SCCRS, while the next section highlights sources of funding. The financial plan includes both mechanisms such as debt financing as well sources to pay for the SCCRS. This section examines both current and potential sources specific to Rhode Island in light of any limitations and opportunities.

- **Federal Funds**

The SCCRS has not been identified to receive federal funds at this time, but the project is listed in RIDOT's 1997-2002 Transportation Capital Program under the study and development section and is mentioned in the FY 2002 Capital Budget. The current Capital Transportation program does include a funding category for system management projects with a line item for "future projects" funded with TEA-21 formula funds (\$13 million in 2001 and \$12.5 million in 2002). Allocations for the system management category are based on intermodal and congestion management, air quality conformity, and safety management, so SCCRS could potentially meet the allocation criteria of system management. In order to get the SCCRS in line for these funds, the project needs to be added to the state's list of transportation projects with identified funds. Many projects compete for the federal funds, so the state uses this list to prioritize transportation funds.

Politically, it is not likely that Rhode Island would use federal funds already slated for roads given its underfunded roadway system, so Rhode Island may need to employ future federal funds from categories that support transit projects, such as the CMAQ program. The State of Rhode Island is a serious ozone nonattainment area. The CMAQ program of TEA-21 provides funds for projects such as the SCCRS that improve air quality in nonattainment and maintenance areas for ozone and carbon monoxide. Under the CMAQ program, Rhode Island can undertake public-private partnerships to implement a project using these funds. Rhode Island will receive approximately \$8.8 million dollars total from the CMAQ program from 1998 to 2003.

Another source of federal funding is the Surface Transportation Program (STP) which includes a category of funding for transit capital projects. Rhode Island will receive about \$34.7 million annually in STP funding over the life of TEA-21. Furthermore, the federal government has provided a degree of flexibility for funds under TEA-21. For instance, up to 50 percent of the funds apportioned as part of the National Highway System program (which consist of funds mainly for roads) may be transferred to other programs such STP or CMAQ.

Although, the previous programs fall under the Federal Highway Administration (FHWA), FTA is also responsible for funds under the TEA-21 authorization package. FTA's program consists of both formula funds and discretionary allocations. Rhode Island will receive \$80,481,226 total in formula funds through FY2003 for capital projects which can include preventative maintenance. Rhode Island includes a category of "future projects" for its FTA allocations. The following table lists the expected federal allocations, including the local match amount, for future projects from FY 2005 to FY 2020 in five year increments.

Table 4.4.2
Allocation of FTA Funds to Future Projects
(Total of Federal and Local Match Dollars - \$ Millions)

FY 2005	FY 2010	FY 2015	FY 2020
\$21.3	\$20.9	\$20.2	\$19.4

The discretionary portion of FTA funds offers Rhode Island the best opportunity for SCCRS. Under TEA-21, the federal government will provide up to 80% of the funding for new fixed guideway systems under the Transit Capital Investment Grants and Loans program. However, the funding of this discretionary program is allocated on a competitive basis and projects must be earmarked by Congress

as a “New Start” to compete for funds. The T.F. Green Commuter Rail and Maintenance Facility is currently the only project earmarked as a “New Start” project under TEA-21 for the state. Rhode Island can request that the SCCRS project be earmarked in 2003 with the renewal of TEA-21. If Rhode Island would like to try obtain funds prior to 2003, the state can request an earmark through its congressional delegation. Rhode Island should make this request as soon as possible as deadlines are quickly approaching for next fiscal year budget. It is important to note that funds from this category are for capital assistance, and not operation of the system. In addition, Rhode Island might be able to gain additional funds through the loans that are available under this funding category.

Under TEA-21, the following factors will be considered in evaluating “New Start” projects:

- Population density and current transit ridership in the corridor;
 - Technical capability of grant recipient to construct the projects; and
 - Factors that reflect differences in local land, construction and operating costs.
- ***State Funds***
 - **Gas Tax**

Unlike many other states, Rhode Island does not have a “trust” fund dedicated solely to transportation. Currently, state gas tax revenues are used for both transportation and the general fund, however, this practice is being phased out. Currently, RIDOT receives 20.5 cents of the 28 cents gas tax with the remainder divided among, RIPTA receiving 5.75 cents, 1 cent to elderly and disabled transportation services, and the general fund collecting 0.75 cents. It is anticipated that by 2003 all gas tax revenues will be dedicated solely for transportation purposes, split between RIDOT, RIPTA and elderly and disabled transportation services. Currently, RIDOT plans to use any additional funds from the gas tax for transportation debt service, personnel costs, maintenance costs, and potentially highway capital improvements. However, it is possible that gas tax proceeds diverted from the general fund could be used for the SCCRS project. It is estimated that 1 cent of the gas tax generates approximately \$4.5 million dollars per year.

Increasing the gas tax or tying its level more closely to inflation would create an additional source of revenue. However, the fuel tax is second highest in the nation and Rhode Island has a relatively small number of drivers and vehicles due to a modest population, so revenue gains from an increased fuel tax would not be substantial. In fact, neighboring Connecticut has the highest gas tax in the nation, but already has begun to reduce it, which may entice Rhode Island residents to lobby against increases or to purchase fuel elsewhere. It is important to note that increasing the gas tax in Rhode Island would not require major legislative changes.

- **Appropriations**

The state budget can include special appropriations for transportation; however, given the state’s current debt burden, special appropriations could only provide a small amount of funding for the SCCRS.

- **Vehicle Fees**

In the past, Rhode Island has collected over \$50 million dollars per year (net of administrative costs) from vehicle registration and permit fees, but this money is not used for transportation purposes. Local governments collect vehicle excise fees, but Rhode Island has recently decided to phase out excise tax for vehicles in an effort to lower taxes for its citizens. According to the current plans, the state of Rhode Island will compensate cities and towns for the lost revenues for approximately seven years.

- **Sales Tax**

The State of Rhode Island collects a 7% sales and use tax, and it would require special legislation to increase or dedicate a portion of this tax to commuter rail investments. In the early 1990's, six-tenths of a cent of the sales and use tax was dedicated to the debt service of the state with the rest allocated to the general fund. The sales and use tax will account for approximately 33% of general revenues in the FY 2002 (FY 2002 - 2006 Capital Improvement Plan). The State's transportation plan does recommend the consideration of a dedicated sales tax for Rhode Island's transportation system. Most importantly, the sales tax is not a one time allocation of funds, but an ongoing revenue source (that is tied to inflation) which RIDOT could use to repay debt and fund the SCCRS O&M budget. Of course, sales tax revenues are dependent on the economy of Rhode Island, but current forecasts predict a stronger future for the state. In addition, administering the tax would require little effort as it is already collected and consumers are used to a sales tax. Furthermore, residents only pay this tax in small amounts versus one large fee which can be unpopular. A sales tax increase of one-tenths of one percent would generate approximately \$7.5 million dollars a year.

However, a combination of factors could work against implementing even just a slight increase. First, Massachusetts has a lower sales tax than Rhode Island, so an increase may not be politically viable. Second, it would require special legislation. Third, the trend in Rhode Island seems to be to reduce taxes which has been prompted by some degree of perceived anti-tax sentiment. Finally, Rhode Island collects an income tax, and often states with both a sales tax and personal income tax have a difficult time increasing the sales tax. The income tax is continuing to decrease in Rhode Island as the FY 1998 Appropriations Act will reduce the income tax to 25.5 percent of an individual's federal liability in January 2001.

- ***Other Options***

- **Tolls**

Currently, tolls have been limited by statute to two bridges under the domain of the Rhode Island Turnpike and Bridge Authority (RITBA). Toll revenue is to be used for construction, maintenance, operation, and toll revenues from these bridges have exceeded its costs. Recently, the Authority voted to lift the toll on the Mount Hope bridge as the revenues on one bridge are sufficient to cover debt service and all operating costs for both bridges. The Governor's budget for FY1999 recommended greater flexibility for the toll revenues to be used for transportation improvements on facilities adjacent to the bridges.

- **Toll Revenue Credit**

Under TEA-21, toll revenues from public roads and bridges can count as a local match for transit capital investments. The tolls revenues must be used for a transportation capital investment for a one year time with no carryover. The problem with using toll revenue credits in Rhode Island is that the toll revenue is currently restricted by statute to improvements to the toll bridge facilities. If the state of Rhode Island could change this rule, toll revenue credits would provide a source of local match funds to leverage federal funds. Another obstacle to the use of toll revenue credits is that Rhode Island has phased out the toll on one of its bridges. This action would reduce revenues, thus reduce the amount that could be used as toll revenue credits.

- **Soft Match**

A soft match is a local match for federal funds that is provided by a local government agency as services or purchases for a transportation project. A soft match would allow RIDOT to purchase services and/or equipment and use the associated costs of these purchases as a state match for federal funds. If RIDOT were able to purchase or otherwise acquire the rail vehicles for SCCRS (with its own funds), these purchases could serve as a local match for federal funds. Toll revenue credits as described above are considered a soft match.

- **Local Transportation Funding Options**

The primary source of funding for Rhode Island's 39 cities and towns is property taxes, and these taxes are among the highest in nation. In fact, recently the Governor has tried to lower property taxes, so increasing these taxes does not seem very feasible. Currently, local governments do not have the authority for additional funding options, such as a local option gasoline or local option sales tax.

- ***Operating Sources***

Funds from the operation of the actual rail system is another source, but obviously operating revenues are not available until service begins, so these funds generally are used for O&M costs.

- **Farebox**

A goal that farebox revenues cover 35% of O&M costs has been set for RIPTA. Although the agency has not been able to meet this goal, RIPTA is strongly committed to increasing its farebox recovery return to 35% and not allowing it to decline thereafter. The current fare is \$1.25 for all transit routes, but the fare for the SCCRS is expected to be based on the MBTA fare structure of 10 cents a mile which translates to about \$4.75 for a one-way trip from Westerly to Boston. The anticipated revenue from the farebox is provided in the following section.

- **Parking Fees**

All the stations along the SCCRS will provide parking for commuters. RIDOT plans to charge \$1.00 per day for parking at the stations along the route, and this fee will constitute an ongoing revenue source which could be used for O&M. The projected revenue from parking fees is described in more detail in the next section.

- **Advertising**

Another source of operating revenue is advertising on rail cars and at the stations. Most transit agencies that use advertising to generate revenue have found that using an external advertising agency for coordination is the best use of resources. The Chicago Transit Authority (CTA) recently generated \$7 million in advertising revenue which covered approximately 1% of its operating costs. RIDOT plans to advertise on the rail cars of SCCRS, and it was assumed advertising would cover 1% of operating costs for the SCCRS.

- **Concessions**

This strategy could provide an ongoing revenue source for the operation of the commuter rail. The concept is relatively simple, unused station space is rented to businesses who sell some type of product or service at the site. Typically the concessions are located at stations or transfer points on the transit property. The potential for concessions will likely exist at the new stations as part of the SCCRS. RIDOT could pass the costs of any construction necessary for concessions at the stations though rent while the businesses are able to benefit from the high customer exposure at the station. Other transit agencies which have made use of this funding strategy have selected concessionaires through a request for proposal (RFP) process selecting the business that seem to be the most likely to be financially rewarding. The Metropolitan Transit Authority (MTA) in New York City has seen great success with this strategy, and collects \$2.7 million for their subway system from concessions. The stations with the most riders are best, so Wickford Junction might be a candidate for concessions with the highest predicted ridership totals. Opportunities may be more limited for SCCRS, since it operates only in the morning and evening peak periods.

Evaluation of Funding Options

From the previous discussion, it is evident that RIDOT has more than one opportunity to fund and finance the SCCRS, and a combination of local, state, federal, and private sources probably represents the best strategy. Unfortunately, some of the revenue sources and cost saving techniques are not applicable at this point in the project development. For instance, although a vehicle excise tax could serve as significant source of ongoing revenue, the current tax in Rhode Island is being phased out.

Table 4.4.3 is a matrix of funding sources and evaluation criteria that RIDOT should consider for implementation of the SCCRS. A plus symbol suggests the option might work well in Rhode Island while a minus symbol indicates the funding option may not be appropriate for implementation of the SCCRS. The probability for implementation is also included in the matrix, and those sources with a high probability are included in the financial model.

To determine the best funding package, RIDOT should analyze the feasibility of funding sources incorporating the following considerations:

- **Uses of Funds:** Are the funds available for capital and/or O&M?
- **Financial:** Would RIDOT or the state need to provide funds as a match?
- **Political Acceptability:** Would the citizens of Rhode Island accept the funding option? For instance, would residents approve a transportation bond package for the SCCRS?

- **Legality:** Is the funding option currently legal in Rhode Island, or would it require new legislation?
- **Administration/Institutional Effort:** Is a collection mechanism already in place or would establishing one require a great deal of effort to implement the option?
- **Facilitating Mechanisms:** Are there any financial tools RIDOT could use to support the SCCRS? In the previous discussion, a number of tools such as turnkey or advance construction are described that support the funding options. This category lists any tools that RIDOT could use to enhance a particular funding option.
- **Revenue Potential:** What is the general revenue potential? Given the fact that the capital costs of SCCRS will range from approximately \$31 to \$82 million as well as the O&M costs from \$3.1 to \$8.0 million, the revenue potential is evaluated based on three categories: 1) under one million; 2) one million to ten million; and 3) over ten million. These estimates are fairly general, and are intended for relative comparison between options.
- **Conclusion:** Based on the other evaluation factors, a brief conclusion on the overall feasibility of the funding source in Rhode Island.
- **Prospects for Implementation:** Each option's implementation prospect is rated good, fair, or poor.

Summary

Based on the evaluation of funding sources, a combination of state and federal sources offer the most potential for the implementation of the SCCRS. There are opportunities for public-private partnerships with this project, but at this point RIDOT has not been able to identify any private interest. As far as federal funds, RIDOT could use some of their apportioned CMAQ and STP funds, but given the project costs and many priorities of the state's transportation system, these federal funds would only be able to cover a small portion of the project's capital costs. Rhode Island should work to get the SCCRS earmarked as a "New Start" as this federal funding program would likely provide the state with the greatest amount of revenues.

Table 4.4.3 — Possible Funding Options for SCCRS

Option	Use of Funds (capital vs. operating)	Current Financial Implications	Political Acceptability	Legality	Administrative/ Institutional Effort	Approximate Funding Potential	Conclusion	Prospect for Implementation
Gas Tax	Both	<ul style="list-style-type: none">– Second highest in US.– RI has a low number of vehicles.– Gas revenues support a number of existing programs including debt service.+ Diverting some of gas tax funds from general fund to SCCRS may be possible.	<ul style="list-style-type: none">+ Public may accept gas tax increase more easily than a new tax.	<ul style="list-style-type: none">+ Tax is used for transit.	<ul style="list-style-type: none">+ Arrangements already established.	\$1-\$10 Million (1 cent generates approximately \$4.5 million per year)	<ul style="list-style-type: none">+ Diverting current gas tax allocation to SCCRS may be possible.– Gas tax increase may be hard to sell to public.	Fair
Special Assessment Districts	Capital	<ul style="list-style-type: none">+ None	<ul style="list-style-type: none">– Political climate in RI favors decreasing taxes.	<ul style="list-style-type: none">– Special legislation likely required.	<ul style="list-style-type: none">– Need to establish collection mechanism.	\$1-\$10 Million	<ul style="list-style-type: none">– Special legislation likely required.	Poor
Tax Increment Financing	Capital	<ul style="list-style-type: none">+ None	<ul style="list-style-type: none">– RI would likely need support of property owners.	<ul style="list-style-type: none">– In RI political climate against property tax increases.	<ul style="list-style-type: none">+ Property taxes already collected in RI, but money would need to flow from local governments to the state for the SCCRS.	\$1-\$10 Million (may not be an ongoing revenue source)	<ul style="list-style-type: none">– Local governments receive a lot of state aid. It may not make sense to state or local government for cities and towns to collect money to be passed on to state.	Poor
Local Transportation Options	Neither	<ul style="list-style-type: none">+ None	<ul style="list-style-type: none">– Current legislation in RI does not include local transportation options.	<ul style="list-style-type: none">– No provisions for local option taxes.	<ul style="list-style-type: none">– Not applicable.	<ul style="list-style-type: none">– Not applicable.	<ul style="list-style-type: none">– Without authority, local governments can not collect funds the SCCRS.	Poor
Public/Private Arrangements								
Leasing	Capital & Operating	<ul style="list-style-type: none">+ An investor provides for new or improved facility.– RI would need to come up with funds for lease payments which will increase O&M costs by a factor of the capital costs.	<ul style="list-style-type: none">+ Not likely to encounter political opposition.	<ul style="list-style-type: none">+ Legal obstacles are not anticipated.	<ul style="list-style-type: none">+ Implementation would not be difficult.	<ul style="list-style-type: none">– Not applicable.	<ul style="list-style-type: none">– RI has a more difficult time finding funds for operating than capital costs.– RI is not likely to find an investor with adequate funds to finance.	Poor
Joint Development	Mainly Capital	<ul style="list-style-type: none">+ A private interest could develop rail facilities (e.g., stations).	<ul style="list-style-type: none">– Communities need to support proposed developments and public-private relationship.	<ul style="list-style-type: none">+ Major obstacles unlikely.	<ul style="list-style-type: none">– Need to find a private interest.	\$1-\$10 Million (depends on costs of development)	<ul style="list-style-type: none">+ RI should support joint developments as a means of offsetting capital costs.	Poor
Others								
Advertising	Operating	<ul style="list-style-type: none">+ None	<ul style="list-style-type: none">– Some object to ads (e.g., tobacco).	<ul style="list-style-type: none">+ None	<ul style="list-style-type: none">+ RIPTA and MBTA already receive revenues from advertising.	< \$1 Million	<ul style="list-style-type: none">+ RIDOT plans to advertise.	Good
Concessions	Operating	<ul style="list-style-type: none">+ RI may be responsible for building facilities for concessions. These costs can be recovered in rent.	<ul style="list-style-type: none">+ None	<ul style="list-style-type: none">+ None	<ul style="list-style-type: none">+ MBTA has concessions.	< \$1 Million	<ul style="list-style-type: none">+ RI should make transit property available for concessions.	Fair

Table 4.4.3 — Possible Funding Options for SCCRS

Option	Use of Funds (capital vs. operating)	Current Financial Implications	Political Acceptability	Legality	Administrative/ Institutional Effort	Approximate Funding Potential	Conclusion	Prospect for Implementation
<i>Grants/Appropriations/Appportionments</i>								
Federal Funds	Capital	+ Some current appropriations could be used for capital investments. RI would most likely need to come up with a 20% match.	– RI has relied heavily on federal funds in past. Funding levels beyond current authorization period may fluctuate.	– Funds cannot be used for operating costs.	+ Arrangements already established.	> \$10 Million	+ The ease of administration and revenue potential are selling points of this option.	Good
(State) Special Appropriations	Both	– Only a small amount could be used for SCCRS.	– SCCRS must compete with many other programs.	+ None	+ Special appropriations are made continually.	< 1\$ Million	– Not likely to generate significant revenue and there is a large number of competing interests.	Poor
<i>Debt Financing</i>								
General Obligation Bonds	Mainly Capital	– RI would need to find funds to pay back any new bonds.	– RI is heavily indebted, so both public and lenders may be wary of new bond issues.	– Although, the state of RI can levy bonds, RIDOT does not have this option.	+ Arrangement is already in place.	> \$10 Million	+ State debt is great, but bonds offer great revenue and no major obstacles for capital expenses.	Good
Transit Revenue Bonds <i>(program under TEA-21)</i>	Capital	– RIPTA is already carrying a debt load, and having trouble coming up with necessary federal fund matches. – Dedicated operating revenue source is required. – Interest rate typically higher than for a general obligation bond.	– RIPTA bonds require voter approval.	+ RIPTA is authorized to issue revenue bonds.	+ No issues anticipated.	\$1-\$10 Million	+ If RIDOT contracts with RIPTA to provide the SCCRS, transit revenue bonds appropriate.	Good
<i>New/Enhanced User Fees</i>								
Farebox	Operating	– RIPTA is currently unable to meet its goal of a 35% farebox return. SCCRS not expected to fully cover O&M expenses.	+ Current plans call for the fare structure to follow MBTA’s fares.	+ No legal ramifications to collecting fares.	+ RIPTA has mechanism in place to collect fares, so do other potential contractors.	\$1-\$10 Million	+ Collecting fares is necessary to the operation of SCCRS.	Good
Parking Fees	Operating	+ None	– Need acceptance of commuters as some parking lots in RI do have fee others do not.	+ None	– RIDOT does not currently collect parking fees.	\$1-\$10 Million	+ RIDOT plans to charge for parking at stations.	Good
Toll Revenue Credits	Capital	+ Could use excess revenue from toll bridge.	– A connection between rail service and toll bridge must be demonstrated.	– Would require change in statute.	+ Collection mechanism is already in place.	\$1-\$10 Million	+ Great source for local match for federal funds.	Fair
Vehicle Fees	Both	– Local vehicle excise tax is being phased out, and state has plans to compensate local governments for loss revenues.	– Local vehicle excise tax is being phased out.	– At this time, the excise tax is collected by local governments.	– Collection mechanism is in place, but excise fee is being phased out.	> \$10 Million (depending on fee)	– Since vehicle excise fee is being phased out, its reinstatement is unlikely.	Poor
<i>New /Enhanced Taxes</i>								
State Sales Tax	Both	+ Even a small increase in the sales tax could generate significant revenues.	– Need to gain taxpayer acceptance. – Major issue is that Massachusetts has a lower sales tax, so any increase in the sales tax may draw additional sales away from Rhode Island to Massachusetts.	– Change in the sales tax would require legislation.	+ Collection mechanism is already in place.	> \$10 Million	+ Sales tax includes revenues that can be used for both capital and operating costs.	Fair

RIDOT will also need to contribute a local match for any federal funds to cover capital expenses and assistance with O&M costs not covered by operating revenues. The most likely option for a local match is for Rhode Island to issue general obligation bonds. The real crux in the funding of the SCCRS is determining a source that can cover not only debt service but also the portion of the ongoing O&M costs not covered by operating revenues. Rhode Island does have a number of options for funding these ongoing costs for the SCCRS (e.g., increased allocation of sales or gas tax, special assessment districts, etc.). As such, the financial model which is discussed in the next section does not identify a specific state source for ongoing costs. The model includes known sources (fares, advertising, parking) as well as potential sources such as federal funds, state general obligation bonds and the necessary level of state assistance.

4.5 Financial Projections for South County Commuter Rail

Financial Model

A financial model which details the sources and uses of funds has been developed based on the previous discussion of financing and funding strategies for the SCCRS. An objective of the financial model is to project one or more financially feasible scenarios for the SCCRS. Federal and state government funds and operating revenues are the basis of the financial model although private participation is not excluded.

- ***Model Assumptions***

The financial projections and conclusions regarding financial feasibility depend on assumptions about funding and project characteristics. The assumptions are detailed by topic. Although the alternatives include three different coordinating agencies (MBTA, ConnDOT, and RIDOT contractor), the choice of operator does not affect the financial responsibility because RIDOT must secure project funds and cover projects costs. Fortunately, RIDOT does have some identified sources of funding for SCCRS and a great deal of flexibility in developing new funding strategies for the SCCRS. All assumptions are based on a hypothetical start-up year of 2000 as year 1 (with capital investment required in 1999 as year 0), and a horizon year of 2025. The financial model has been developed based on constant year 2000 dollar estimates. The use of constant dollar estimates in the financial projections eliminates the need to forecast inflation, thereby making the projections easier to interpret. An implicit assumption of this modeling technique is that fares will increase annually by the rate of inflation so as to maintain a constant real fare in 2000 dollars, though in reality, actual fare increases may be more sporadic. In addition, a constant dollar model tends to conservatively overstate the real cost of future debt service payments.

Project Costs

A major difference between the alternatives is that Alternatives 1A & 3 include a layover facility at Pawtucket (with no associated capital costs) and the other two alternatives include the construction of layover facility at Westerly. Each alternative includes a new station at Wickford Junction. All alternatives will require the purchase of rail locomotives and coaches, and these costs are detailed in the Appendix. It is estimated that in 2020, some additional blind (trailer) coaches will be needed, and these additions (and corresponding costs) have been added to the base year. Alternative 3 would incur less vehicle costs because the service would be able to utilize some of MBTA's existing rail cars.

The main distinction between the O&M costs for each facility is related to the location of the layover facility. Using a layover facility at Pawtucket (Alternatives 1A & 3) would create higher O&M costs as trains would

incur more deadhead miles (miles without passengers) to travel from Pawtucket to Westerly to begin service each day, and return to Pawtucket from Westerly to end service. Only Alternative 3 includes a cost for “shared equipment costs” in which RIDOT would compensate Massachusetts for use of MBTA’s equipment for the SCCRS, but Alternative 3 has much lower costs for service support staff as it could build upon existing staff. In Alternative 2, capital costs for spare equipment are assumed to be the responsibility of ConnDOT in exchange for additional revenue train miles provided with RIDOT purchased equipment in Connecticut. Alternative 2 and 1B have low total O&M cost mainly due to a lower track usage fee which is based on the number of train miles. The following chart examines the total costs for each alternative over the twenty-six analysis period.

**Table 4.5.1
Total Project Costs
(Year 2000 Dollars)**

	Total O&M Costs (annual cost x 26 years)	Total Capital Costs	Total Capital and O&M Costs
Alternative 1A	\$188,842,000	\$59,311,000	\$248,153,000
Alternative 1B	\$167,286,000	\$64,923,000	\$232,209,000
Alternative 2	\$156,241,000	\$81,785,000	\$238,026,000
Alternative 3	\$208,044,000	\$50,535,000	\$258,578,000
Alternative 3A	\$80,211,000	\$31,131,000	\$111,343,000

Alternative 3A has the lowest total project costs, due to its abbreviated service length reducing capital and O&M cost requirements. Of the higher cost alternatives, Alternative 1B appears to be marginally the least costly. However, in the long run Alternative 2 would be less expensive, given its lower O&M costs, which become significant over the twenty-six year operating period for the project.

Ridership

Projected ridership is the primary source of revenue projections for the SCCRS. The ridership forecasts have been extrapolated from forecasts developed by Cambridge Systematics Inc., in 1995 these estimates originally included an initial daily two-way forecast for year 2010 of 5,276 riders, with stations at Westerly, Kingston, Wickford Junction, East Greenwich, Warwick and Providence, and ridership of 4,958 riders for year 2000 without the East Greenwich station. Any ridership losses due to the elimination of the East Greenwich station will likely be recaptured by 2010, so an annual growth factor of 0.62% based on the difference between the 2010 and 2000 forecasts have been applied to the base year (2000) through 2010. For the years after 2010, a 1% annual increase in ridership is assumed based on planning efforts for the station at the T.F. Green Airport. Table 4.5.2 details the ridership forecasts by station for the base, mid-point, and horizon years of the SCCRS project. Note that Alternative 3A would only serve demand from Wickford Junction north.

**Table 4.5.2
Daily Ridership Forecasts**

Route Segment	2000	2010	2025
Westerly- Providence	268	285	331
Kingston-Providence	1,367	1,455	1,689
Wickford Jct.- Providence	2,869	3,053	3,544
Warwick-Providence	454	483	561
Total	4,958	5,276	6,125

Farebox Revenues

To develop estimates of farebox revenues, a series of steps are undertaken with associated assumptions. First, the farebox revenues are based on the zone-based fare structure of the MBTA inclusive of frequent user fare discounts as shown in the table below. The MBTA zone-based structure charges approximately \$0.10 for each additional mile over the minimum trip distance with a fare of \$2.00.

Table 4.5.3
MBTA Zone-Based Fare Structure

Station	Distance to Providence	RI Zone*	Monthly Fares	12 Ride Fare	Single Fare (one-way)
Westerly	44	RI-5	\$163.20	\$57.00	\$5.70
Kingston	27	RI-4	\$134.40	\$42.00	\$4.20
Wickford	19	RI-3	\$112.80	\$36.00	\$3.60
Warwick	8	RI-1	\$76.80	\$24.00	\$2.40

*zone RI-2 kept vacant for a possible future East Greenwich station.

Next, an average fare realization (revenue per passenger trip) is estimated based upon the expected distribution of fare types, as shown in the next table.

Table 4.5.4
Average Revenue Per Passenger Trip

Zone	Monthly Pass Average Fare	12 Ride Prepaid Average Fare	Single Ride Fare	Average Fare Realization
RI-5	\$3.71	\$4.75	\$5.70	\$4.22
RI-4	\$3.05	\$3.50	\$4.20	\$3.32
RI-3	\$2.56	\$3.00	\$3.60	\$2.81
RI-2	\$1.75	\$2.00	\$2.40	\$1.89

**Monthly based on 44 trips, or 22 days. All values in Year 2000 dollars.*

According to audits of the MBTA system, fares are paid with 65% of the riders using a monthly pass, 20% using a 12 Ride Ticket and the remaining 15% using a single ride ticket. Applying these percentages to the revenue per passenger trip, the total revenues are available for each type of trip and by station. For the year 2000 based on a typical operating schedule of 5 days per week, the total fare for SCCRS revenue is projected at \$3,789,154.

Table 4.5.5
Opening Year Farebox Revenue Projections

Station	Annual Trips	Monthly Pass Revenue	12 Ride Prepaid Revenue	Single Ride Revenue	Total Revenue
Westerly	69,680	\$167,992	\$66,196	\$59,576	\$293,765
Kingston	355,420	\$705,670	\$248,794	\$223,915	\$1,178,379
Wickford	745,940	\$1,243,007	\$447,564	\$402,808	\$2,093,379
Warwick	118,040	\$133,922	\$47,216	\$42,494	\$223,632
Total	1,289,080	\$2,250,591	\$809,770	\$728,793	\$3,789,154

All values in Year 2000 dollars.

Parking Revenues

RIDOT plans to charge a \$1.00 per day at the stations along the SCCRS line. To estimate the parking revenues, the daily ridership is multiplied by the \$1.00 charge assuming 85% of ridership is in private automobiles (per February 19, 1999 E&K Modal Split Memorandum); with an auto vehicle occupancy of 1.2 rail riders per vehicle and operating 260 days per year with no mid-day turnover of spaces.

Table 4.5.6
Opening Year Parking Revenue Projections

Station	2000
Westerly	\$24,687
Kingston	\$125,878
Wickford Jct.	\$264,187
Warwick	\$41,806
Total	\$456,549

Advertising Revenue

RIDOT plans to sell advertisements on the rail cars of the SCCRS which will provide some additional operating revenue. In Chicago, the Chicago Transit Authority has found advertising covers about 1% of their operating costs. While Sun Tran in Albuquerque, New Mexico uses advertising revenues to pay for about 5% of their capital budget. For the advertising revenues of SCCRS, a conservative assumption of 1% of the total O&M costs is used for the financial plan.

Federal Funds

As the discussion on funding sources indicated, development of the SCCRS is not likely to be possible without some level of federal funding. Although RIDOT has relied extensively on federal funds in the past, some opportunities still exist for the state to use these funds for the capital expenses of SCCRS. The exact amount of federal funds to be used for this project is unknown, so a percentage is assumed based on past uses of these funds in Rhode Island as well as current funding trends of transit projects throughout the nation. Historically, the federal government has provided Rhode Island with 80% towards some portion of capital costs with a 20% local match, but this share is not likely to be available for present and future projects given the large number of national transportation needs. For purposes of the financial projections, federal funds are assumed to cover 33% for the capital costs for all alternatives mainly based on recent federal funding

trends. In addition, the model included an option for Alternative 1A in which 50% of the capital costs were covered with federal funds to how the debt level could vary.

State Funds

In order to acquire federal funds, RIDOT will need to come up with a local match for the capital expenses. Fares, parking and advertising will only cover a portion of the operating expenses, so the state will also need to identify additional funds for these costs. Rhode Island could issue tax-exempt municipal bonds and use these funds to match the federal funds and cover the remaining capital expenses. The interest rate for 25-year tax-exempt bonds is assumed to be 5.5%. This rate is based on a recent MBTA bond issue and increased slightly to reflect the lower bond rating of Rhode Island and market fluctuation (based on information from the Wall Street Journal, Tuesday, March 2, 1999, Bond Market Data Bank for March 1, 1999, Tax Exempt Bonds, Issue: MA Bay Trans Auth Gen).

The bond issue assumes 2% in up front fees and level repayment. Under this scheme, the amount of interest paid decreases with time and principal payments increase with time, but the payment remains constant over the life of the debt service. For simplicity, an annual repayment schedule is assumed. In addition, a debt reserve account has not been included as an added expense because the sales tax that will be used for repayment is fairly stable. The amount of debt required for this project is based on the difference between federal funds and the capital costs.

As previously mentioned, a specific source of state funds for the ongoing costs (O&M and debt service) has not been identified in the financial model. The amount of state assistance (in year 2000 dollars) is determined based upon achieving a minimum Debt Service Coverage Ratio (DSCR) of 1.30¹. In other words, state assistance would be pledged to augment project cash flows available for debt service such that they will cover debt service costs 1.3 times over. In addition to maintaining a DSCR of 1.3 or better, the project would also likely be required to set aside a debt service reserve account equal to at least one-half of the annual debt service expense. It is anticipated that any cash flows in excess of those required for debt service and the funding of the reserve account would eventually be made available for other uses or returned to the general fund, as achievement of the DSCR requirement for each year is demonstrated.

Model Results

Using the financial model developed for this project, several financial scenarios were tested for the various project alternatives to identify and rank feasible SCCRS funding options. In assembling potentially feasible scenarios, funding options were structured to achieve a balance between a reasonable expectation for federal funding of capital and a manageable level of state participation, both in matching federal capital investments and covering a portion of ongoing operating and maintenance expenses. Within this balance of federal and state funding, given overall project requirements, there are multiple possibilities for individual sources of funds and funding mechanisms as discussed previously.

The project evaluation period modeled is effectively 26 years (1999-2025), with capital investment occurring entirely in year 0 (modeled as 1999) and revenue operations modeled from 2000 through 2025. The bonds are issued in year 0 with repayment beginning in year 1 (2000) for 25 years.

¹ The Debt Service Coverage Ratio is the cash flow available for debt repayment divided by total debt service cost.

Table 4.5.7 below shows the sources and uses of funds during project implementation in year 0 for each alternative. Note that the overall project cost, as shown in the total uses of funds, includes the capital investments plus financing fees from the sale of bonds. A more detailed schedule of sources and uses of funds is provided in the Appendix.

**Table 4.5.7
Sources and Uses of Funds During Implementation (Year 0)**

Item	Alt. 1A	Alt. 1B	Alt. 2	Alt. 3	Alt. 3A
Sources	\$60.1 M	\$65.8 M	\$82.9 M	\$51.2 M	\$31.5M
Federal Grants (33%)	\$19.6 M	\$21.4 M	\$27.0 M	\$16.7 M	\$10.3M
State Bond Issue Proceeds	\$40.5 M	\$44.4 M	\$55.9M	\$34.5 M	\$21.2M
Uses	\$60.1 M	\$65.8M	\$82.9M	\$51. 2 M	\$31.5M
Stations	\$15.9 M	\$15.9 M	\$15.9 M	\$15.9 M	N/A*
Layover Facility & Track	\$0 M	\$5.6 M	\$5.6 M	\$0 M	N/A*
Locomotives	\$11.9 M	\$11.9M	\$17.8 M	\$5.9 M	N/A*
Coaches	\$31.5 M	\$31.5M	\$42.5 M	\$28.7 M	N/A*
Financing Fees	\$0.8 M	0.9 M	\$1.1M	\$0.7 M	\$0.4M

Note: All values in millions of year 2000 dollars

* indicates itemized expenditure detail not available

It is important to note that the above table lists the maximum amount of debt financing that would need to be taken on for this project. Rhode Island may be able to use some of its current sources of transportation funding such as the gas tax to offset this amount. The debt financing required for each alternative was iteratively determined as the total project cost inclusive of financing fees less the federal share of capital investments. The annual debt service payments associated with these figures were then checked against the annual cash flow available for debt service to ensure that a minimum debt service coverage ratio of 1.3 was maintained in all years of debt amortization. If Rhode Island did take on the maximum amount of debt necessary for project implementation, all alternatives, except for 3A, would exceed RIDOT's proposed annual bond issuance. Even the lowest cost full-system alternative (Alt. 3) would require \$34.5 million dollars in debt financing, while the proposed bond issuance for transportation in FY 2000 is approximately \$30 million.

Table 4.5.8 below shows the initial level of state funding assistance that would necessary to meet all operating and maintenance costs while at the same time covering the annual debt service cost by a factor of 1.3 for each alternative. As ridership and fare revenues rise over time, increasing cash flow would tend to increase the DSCR, causing the required level of state assistance -- in constant year 2000 dollars -- to decline, though inflation could make the nominal amount of state assistance in year of expenditure dollars go either way. For example, Alternative 2 requires \$5.87 million of state assistance in the first year of operations, which declines by nearly one million to \$4.92 million (in year 2000 dollars) by year 25, though the nominal amount expended will be much higher by then due to 25 years of inflation.

Table 4.5.8
State Operating Assistance Required in the Opening Year

Alternative	Amount Needed to Close Operating Gap	Additional Amount Required for 1.3 DSCR	Total Estimated State Assistance (Year 1)
Alternative 1A	\$5,907,000	\$889,000	\$6,796,000
Alternative 1B	\$5,432,000	\$992,000	\$6,424,000
Alternative 2	\$5,870,000	\$1,250,000	\$7,120,000
Alternative 3	\$6,200,000	\$757,000	\$6,957,000
Alternative 3A	\$2,955,000	\$757,000	\$3,712,000

Note: amounts in millions of year 2000 dollars

There is a 25 year time period for the repayment of the project's bond debt, so by year 2024 all debt should be retired. Once the debt is paid off, annual cash flows needs would likely be reduced and, thus, state funds used to supplement the ongoing costs would also decrease unless further debt is taken on for capital replacement or other improvements. The following table shows the year 26 sources and uses of funds before state assistance, and indicates level of annual operating assistance that the state would need to provide for each alternative once the project debt has been retired.

Table 4.5.9
Sources & Uses of Funds in Year 26 and Required State Operating Assistance

	Total Sources	Total Uses (O&M)	O&M Shortfall
Alternative 1A	\$5.3 M	\$7.3 M	\$2.0 M
Alternative 1B	\$5.3 M	\$6.4 M	\$1.1 M
Alternative 2	\$5.3 M	\$6.0 M	\$0.7 M
Alternative 3	\$5.3 M	\$8.0 M	\$2.7 M
Alternative 3A	\$3.3 M	\$3.1 M	\$0 (operating surplus of \$0.2 M)

Note: Assumes retirement of all debt in previous year; amounts in millions of year 2000 dollars

Financial Statements

Two types of financial projections were developed for this project by alternative: 1) *pro forma* income statements, and 2) *pro forma* sources and uses of funds. The latter is a cash flow projection using constant 2000 dollars that includes both sources and uses of revenue for capital as well as O&M costs. The *pro forma* income statement examines just the operating revenues and O&M expenses with a resulting net income. Both financial statements were prepared for each alternative and are presented in the Appendix for selected years.

The *pro forma* income statement includes the net income for each alternative, which is basically the difference between project revenues (fare, parking and advertising) and total current expenses (operating costs and debt service; public agencies are exempt from usual taxes). All alternatives have a negative net income, thus the state must provide some funding assistance to make up this difference between revenues and expenses. The *pro forma* statement also provides three useful operating metrics: (1) the farebox recovery ratio, calculated as the projected annual fare revenues divided by annual O&M costs; (2) the farebox recovery ratio based upon total annual expenses including debt service; and (3) the O&M cost per rider based on the projected fares revenues and the costs. The following table presents these operating metrics for each alternative.

Table 4.5.10
Selected Operating Performance Measures by Alternative

Alternative	Minimum Farebox Recovery Ratio (% of O&M costs)	Minimum Farebox Recovery Ratio (% of total expenses incl. debt service)	Opening Year Total Cost per Rider (O&M + debt service)
Alternative 1A	52%	37%	\$7.93
Alternative 1B	59%	39%	\$7.56
Alternative 2	63%	37%	\$7.89
Alternative 3	47%	36%	\$8.17
Alternative 3A	75%	50%	\$5.37

The farebox recovery ratio is an important measure for transit service. Public transit in the United States is typically subsidized for social policy reasons to keep fares reasonable, provide mobility options and encourage use, recognizing that farebox revenues will not cover O&M costs. However, many transit agencies do set goals for their farebox recovery ratio, and RIPTA is presently trying to achieve a ratio of 35%. The lowest farebox recovery ratio based on just operating expenses over the twenty-six time period for all alternatives is well over 35%. Taking into account all expenses (operating and debt service), farebox recovery ratios range from 36% to 50%.

Project Internal Rate of Return

The project internal rate of return (IRR) measures the overall return on investment over the entire 27-year evaluation time period (1 year for construction and 26 years of operation) including the investment return timing effects. Because project revenues will not be able to fully cover operating costs let alone provide positive returns, the SCCRS does not generate a positive IRR for any of the alternatives. This result further supports the need for the state to provide ongoing financial assistance. To entice private interest in the operation of this project, a subvention payment that would generate an IRR of at least 15% is needed as discussed in the following section.

Operation of SCCRS by Private Interest

There is always the option that a private interest could operate the SCCRS. At this time, Amtrak or RIPTA would be the most likely choice to secure service for the operation of the stand alone alternatives. The existing presence of not only Amtrak and RIPTA but MBTA and ConnDOT in the greater transportation system of Rhode Island somewhat precludes the operation of the SCCRS by a private operator. In addition, rail service in this larger transportation system of Massachusetts and Connecticut is complex with both states contracting with Amtrak to provide service. Adding a private operator to this arrangement may add another layer of complexity and incompatibility between these systems. The cash flow projection model predicts the minimum subvention payment required for a private operator, which is basically how much subsidy RIDOT would need to provide to a private interest. This subvention payment is calculated to yield an internal return rate (IRR) of 15%. The annual subvention payments are listed below for each alternative:

Table 4.5.11
Annual Subvention Payments Required

Alternative	Subvention Payment
Alternative 1A	\$12,000,000
Alternative 1B	\$12,900,000
Alternative 2	\$15,500,000
Alternative 3	\$10,650,000
Alternative 3A	\$7,670,000

Interestingly, the alternatives with the highest capital costs (1B & 2) would require the greatest subvention payment.

Lowering Project Debt

If a funding strategy such as the gas tax (or a new tax) was adopted to provide for the ongoing costs of the SCCRS, the initial proceeds might be available for capital costs and lowering project debt. For instance, if proceeds from the gas tax were allocated to the SCCRS, they may be collected prior to service beginning for the SCCRS. Or, Rhode Island may be able to increase the sales tax before any O&M costs were incurred. In either case, Rhode Island may have the option to use the initial proceeds for capital costs, thus lowering project debt.

Because the state is trying to reduce its debt, the financial model includes two additional options for lowering the debt need to implement the SCCRS. First, the federal share of funds was increased to 50% for Alternative 1B because it has the lowest total project cost over the 25-year analysis period. Second, toll revenue credits were added as a revenue source to offset debt. The previous discussion of funding sources highlighted toll revenue, which can be used as a local match for federal funds. The federal government allows toll revenues from a toll bridge to be used for one year as a local match. There are two obstacles to this revenue source; one is the phasing-out of tolling on one of the two toll-bridges in Rhode Island, and the second is that state statutes limit toll revenues to the construction, maintenance, and operation of the tolled facility.

Although, toll revenue is currently not able to support the SCCRS project, the financial model has included this revenue source for Alternative 1B to demonstrate how Rhode Island could lower the amount of debt needed for the capital. Recently, as part of the state budget the Governor recommended that \$10 million dollars in toll revenue be used for improvements to turnpikes and bridges within the authorities' domain. It was assumed that this amount could potentially be used for the SCCRS in a future year (although it is not likely this significant of an amount would be available as the remaining toll bridge is phased out). The \$10 million dollars in toll revenue credit reduces the debt for Alternative 1B and further indicates the importance of pursuing the possibility of using toll revenue credits as a local match to federal funds.

Conclusions

The strongest message which comes out the financial plan is the need for ongoing financial assistance from the state for the implementation of the SCCRS. To cover the capital costs, the state should try get the SCCRS earmarked as "New Start" project to get the greatest amount of federal funds. Based on the financial model, the state will need to provide from \$3.7 million (Alternative 3A) to \$7.10 million (Alternative 2) per year to pay for debt service and O&M costs. This amount could be covered by 1 to 2 cents of the current gas

tax (or an increase of the current gas tax) as 1 cent of gas tax generates approximately \$4.5 million dollars. Or, the state could increase the sales tax by approximately one-tenth of one percent to cover these expenses.

As for comparing the alternatives, each project would require some combination of state and federal assistance. At this point in project development, alternatives with lower capital and O&M costs will likely fare the best. Among the full-system alternatives, it is interesting to note that the higher capital cost alternatives (1B and 2) have the lowest annual O&M costs. Comparing the alternatives on an O&M cost per rider basis, as expected Alternative 3A's abbreviated alignment results in lower O&M costs per rider (\$3.57 per rider in opening year), as it costs increasingly more per rider to provide service to Westerly and Kingston.

The projected total cost per rider in the opening year for the full-system alternatives range from \$7.56 for Alternative 1B to \$8.17 for Alternative 3. Historically Rhode Island has had an easier time acquiring funds for capital costs; this tends to make Alternatives 1B and 2 relatively more attractive than the other full-system alternatives (1A and 3). Interestingly, when comparing the level of state funding assistance required for operating a full-system SCCRS in the opening year, Alternative 2 requires the greatest amount (\$7.12 million dollars) while Alternative 1B requires the least amount (\$6.42 million dollars). However, Alternative 3A may be a good starting point for Rhode Island, particularly given its lower initial costs and natural extension of the existing MBTA service to Boston, with the possibility of extending further south to Kingston and Westerly in the future.

SECTION 5.0 ECONOMIC EVALUATION

5.1 *Introduction*

This economic evaluation of the proposed Rhode Island South County Commuter Rail Service (SCCRS) consists of three main components. The first section is an economic impact analysis that measures the likely overall economic impacts that would be attributed to construction and ongoing operations of the proposed commuter rail service. This section considers both the gross and net or “new money” impacts of capital investments and O&M expenditures. The second section considers the economic feasibility of the SCCR, comparing its quantifiable user and non-user benefits with the capital and O&M costs. The third and final section addresses the non-quantifiable community and environmental benefits that are associated with new commuter rail service – benefits related to land use and environment, economic development, financial management, and transportation management.

5.2 *Economic Impact Analysis*

Capital Investment Impacts

- **Output, Earnings, and Employment Impacts**

Significant state economic impacts would result from the construction of facilities for South County Commuter Rail Service (SCCRS). The intent of this analysis is to assess the likely overall economic impacts that would be attributed to SCCR construction, as measured by increases in state output, employment, and associated job earnings.

Construction expenditures would occur for one full year, directly creating new demand for construction materials and jobs. These direct impacts would then lead to indirect or secondary impacts, as the production of output by firms in other industries increase to supply the demand for inputs to the construction industry. Both the direct and indirect impacts of construction expenditures cause firms in all industries to employ more workers to meet increases in demand; this leads to induced impacts as the additional wages and salaries paid to workers lead to higher consumer spending.

The extent to which the SCCR capital investments generate such impacts will be examined below after discussing methodology and assumptions.

- **Methods and Assumptions**

To analyze the economic impacts of the SCCRS capital investment, it is necessary to examine the economic reactions which an increase in the demand for construction goods and services creates. Economists use input-output (I-O) models to analyze how changes in the production of a specific firm or industry alter the flow of funds into and out of all other industries as well as households. By tracing how production in one economic sector consumes the output of other sectors as production inputs, and how each of these other sectors then in turn influence the demand for the output of yet other sectors, input-output analysis facilitates the calculation of multipliers which provide a quantitative estimate of the total employment and income impacts within the local economy (State of Rhode Island) that compound from initial new expenditures.

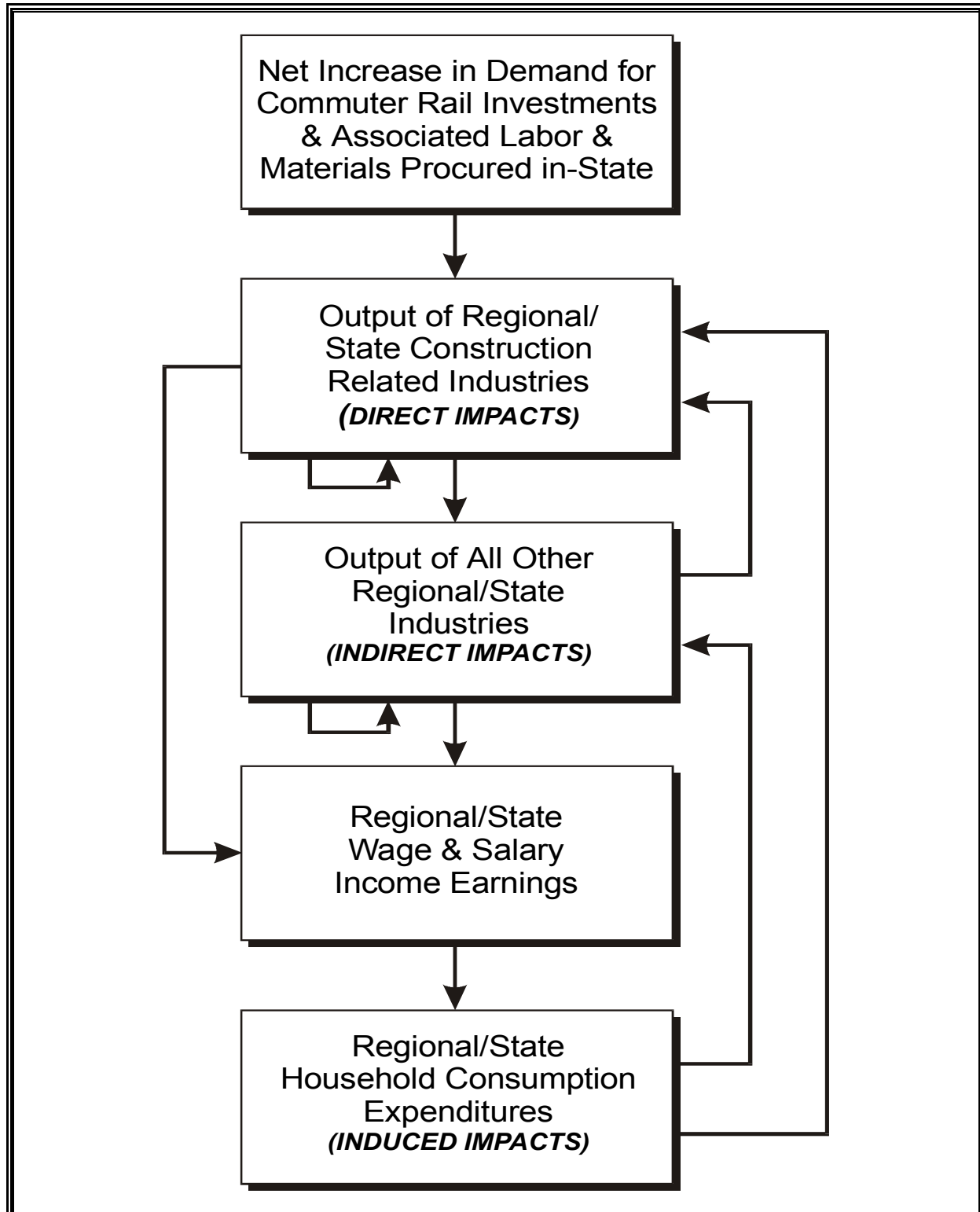
- **Terminology**

Defining the following terms aids in understanding how SCCRS construction would lead to multiplied impacts on the Rhode Island economy.

- **Direct Impacts** — the increase in demand for station construction, rolling stock, and related railroad materials and services within a defined regional or state economy arising from undertaking the SCCRS project, measured as capital expenditures.
- **Indirect Impacts** — the sum of all inter-firm and inter-industry transactions that filter through the regional or state economy resulting from the purchase of material and labor inputs by the directly impacted firms in the course of producing their capital investment-related output.
- **Induced Impacts** — the increase in household consumption of goods and services of all firms within the regional or state economies by the workers who receive additional earnings resulting from either the direct or indirect impacts of capital investment.
- **Total Impacts** — the sum of the direct, indirect and induced economic impacts as measured by the overall increase in output, employment, and/or earnings within the regional or state economies; also referred to as the total multiplied impacts, where the multiplier is the factor ratio of total to direct impacts.
- **Gross Impacts** — the economic effects of total project expenditures prior to assessing what proportion of those expenditures and subsequent impacts would likely have normally occurred in some other manner in the absence of the project being evaluated. Impacts are only assessed for the portion of expenditures that are expected to be procured locally.
- **Net or “New Money” Impacts** — represent just those economic effects attributable to funds that are uniquely available for expenditure on the proposed project, and would otherwise not enter the regional or state economies; **economists tend to place more emphasis on the net or new money impacts as more accurate measures of the true increases in output, employment, and earnings.**

Figure 5.2.1 illustrates the typical multiplier spending reactions that would arise from an increase in the demand for rail construction activity and its associated flow of funds through the local economy. Note that the local economy can be defined as a region of one or more counties, or the entire state.

Figure 5.2.1
Construction Spending Multiplier Reactions



Capital Costs and Funding Sources

The Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce maintains the national input-output accounts, from which it derives region-specific final demand multipliers for output, earnings, and employment, by industry/economic sector, using its Regional Input-Output Modeling System (RIMS II). These RIMS II regional multipliers differ from their national counterparts by the extent to which (1) the regional supply of an industry's output is sufficient to meet regional demand, (2) household consumption expenditures are made within the regional economy, and (3) state and local taxes dampen household expenditures.

BEA regional multipliers based on 1995 data are currently available for the entire State of Rhode Island and were used for this impact analysis.

Five operating alternatives were evaluated for multiplier impacts. Table 5.2.1 lists the capital costs associated with the five alternatives. A more detailed capital cost table is included in Appendix A.

Table 5.2.1
Capital Cost Summary

Alternative Number	Alternative Name	Total Projected Capital Costs
1A	Stand-Alone 1 (Pawtucket Layover)	\$59.3 M
1B	Stand-Alone 2 (Westerly Layover)	\$64.9 M
2	ConnDOT Extension	\$81.8 M
3	MBTA Extension	\$50.5 M
3A	MBTA Incremental Extension	\$31.1 M

- **Application of the RIMS II Multipliers**

Three classes of RIMS II final demand multipliers are utilized to estimate the gross and net impacts:

- Final Demand Output Multipliers translate the initial project capital expenditures (demand) for construction outputs to the total multiplied effect on the demand for output of all firms/industries (in dollars) within the state economy;
- Final Demand Earnings Multipliers translate the same direct project expenditures into the total multiplied effect on wage and salary earnings within the state economy; and
- Final Demand Employment Multipliers convert project expenditures into the total multiplied effect on employment within the state economy, expressed in person-year jobs.

An estimate for the direct employment associated with station construction and vehicle assembly can be backed into by dividing a fourth class of multiplier, the ***Direct Effect Employment Multipliers***, into the total employment estimates derived from the final demand employment multipliers since the capital cost estimates do not include detailed labor requirements. Similar ***Direct Effect Earnings Multipliers*** and resultant direct wage and salary earnings estimates can also be derived.

There are two basic approaches for applying the RIMS II final demand multipliers to a transportation investment project such as SCCRS. Where detailed capital costs are available by the dollar value of each type of construction-related material or service, then industry-specific multipliers for output, employment and earnings can be matched to the direct expenditure for each material or service, weighted by the share of the item that is procured within the local (state) economy. An alternate approach uses only the multipliers for the construction industry by assuming that station construction and related railroad services are the final products purchased in the absence of detailed capital cost estimates. In the case of the SCCRS, a hybrid approach is used to reflect the level of detail in the capital cost estimates at the current level of planning.

Here, capital costs are divided into two categories: general construction and vehicle procurement. The first category, general construction (inclusive of engineering and design services), is assumed to be completely procured within the regional economy. The construction services industry RIMS II multipliers for the region and state are then applied to this portion of the total capital costs. Commuter rail trainsets are assumed to be primarily procured from outside the State of Rhode Island with the exception of local final assembly, which accounts for approximately ten percent of vehicle expenditures. The ten percent expended within the region is matched to the RIMS II set of motor vehicles and equipment multipliers. Table 5.2.2 presents the relevant final demand multipliers, as well as the direct effect multipliers for the State of Rhode Island.

Table 5.2.2
State-Wide Economic Impact Multipliers

		Final Demand Multipliers			Direct Effect Multipliers	
Expenditure Category	BEA RIMS II Industry Classification & No.	Output (dollars)	Earnings (dollars)	Employment (jobs)	Earnings (dollars)	Employment (jobs)
STATE-WIDE MULTIPLIERS						
Construction	06 Construction	1,9068	0.6052	25.60000	1.9655	2.1007
Vehicles	20 Motor Veh. & Equip.	1.7396	0.4526	13.80000	1.9635	3.1361

Source: U.S. Department of Commerce, Bureau of Economic Analysis

Table 5.2.3 presents the capital investment cost distribution for each alternative by these industry expenditure/multiplier categories.

Table 5.2.3
Commuter Rail Capital Costs by Expenditure/Multiplier Category

Alternative Number	Capital Cost Estimate	Expenditure/Multiplier Categories	
		General Construction	Vehicles & Assembly
1A	\$59.3 M	\$15.9 M	\$43.4 M
1B	\$64.9 M	\$21.5 M	\$43.4 M
2	\$81.8 M	\$21.5 M	\$60.3 M
3	\$50.5 M	\$15.9 M	\$34.7 M
3A	\$31.1 M	\$13.8 M	\$17.4 M
Locally Procured Shares		100%	10%
Note: Costs are expressed in 2000 dollars.			

The gross total impacts on output, earnings and employment can be calculated by multiplying the expenditure in millions of dollars by category in Table 5.2.3 by the percentage procured within the regional/state economy and by the appropriate final demand multiplier in Table 5.2.2 . Using Alternative 1A as an example, expenditures of \$15.9 M in the general construction category yields a gross employment impact on all industries within the regional economy of

$$(\$15.9 \text{ M} \times 100\% \times 25.6000) = 407$$

person-year jobs. However, some of these jobs would have occurred anyway without SCCRS construction through alternative uses of local funds. The more realistic measure of net impacts on employment can be assessed by multiplying the gross total employment impact by the percentage of general construction expenditures representing new money to the region, which depends on the level of Federal and other out-of-state funding available (see the Financial Analysis Report). Assuming Federal funding in the magnitude of 33% of total funding sources would give

$$(\$15.9 \text{ M} \times 100\% \times 25.6000 \times 33\%) = 134$$

person-year jobs, which represents the increase in employment attributable to new money entering the State of Rhode Island.

Gross direct construction related employment within the region can be derived by dividing the direct effect employment multiplier from Table 5.2.2. into the gross total employment in all industries attributable to the \$15.9 M in construction expenditures, or

$$(407 / 2.1007) = 194$$

person-year jobs in commuter rail design, engineering and construction. Similarly, gross direct employment earnings for these 194 person-year jobs over the construction period would total

$$(\$15.9 \text{ M} \div 1.9655) = \$8.1 \text{ M}$$

in 2000 dollars. Similar calculations can be performed for vehicle expenditures.

- **Summary of Project Investment Impacts**

The gross and net total impacts on output, earnings and employment for the State of Rhode Island are exhibited in the following tables. Table 5.2.4 presents the gross total economic impacts. Under Alternative 1A, new demand for construction would generate gross direct impacts equal to the capital cost of \$15.9 million in 2000 dollars. Adding in the indirect and induced impacts on the output of other regional firms, the gross multiplied impact on output would total \$30.3 million over the construction period. Of this amount, \$9.6 million would be paid to workers as wage and salary earnings for the 407 person-year jobs generated.

Table 5.2.4
Gross Total State-Wide Economic Impacts

<i>Alternative & Expenditure Category</i>	<i>Gross Direct Expenditures</i>	<i>Percent Locally Procured</i>	<i>State-wide Gross Total Impacts</i>		
			<i>Output (\$ M)</i>	<i>Earnings (\$ M)</i>	<i>Employment (prs-yr jobs)</i>
1A Stand Alone (Pawtucket Layover)	\$59.3 M		\$37.8 M	\$11.6 M	467
Construction	\$15.9 M	100%	\$30.3 M	\$9.6 M	407
Vehicles	\$43.4 M	10%	\$7.6 M	\$2.0 M	60
1B Stand Alone (Westerly Layover)	\$64.9 M		\$48.5 M	\$15.0 M	610
Construction	\$21.5 M	100%	\$41.0 M	\$13.0 M	550
Vehicles	\$43.4 M	10%	\$7.6 M	\$2.0 M	60
2 ConnDOT Service Extension	\$81.8 M		\$51.5 M	\$15.7 M	633
Construction	\$21.5 M	100%	\$41.0 M	\$13.0 M	550
Vehicles	\$60.3 M	10%	\$10.5 M	\$2.7 M	83
3 MBTA Service Extension	\$50.5 M		\$36.3 M	\$11.2 M	454
Construction	\$15.9 M	100%	\$30.3 M	\$9.6 M	407
Vehicles	\$34.7 M	10%	\$6.0 M	\$1.6 M	48
3A MBTA Incremental Service Ext.	\$31.1 M		\$29.3 M	\$9.1 M	376
Construction	\$13.8 M	100%	\$26.2 M	\$8.3 M	352
Vehicles	\$17.4 M	10%	\$3.0 M	\$0.8 M	24

Tables 5.2.5 and 5.2.6 present the net total economic impacts attributable to new money within the State of Rhode Island for two levels of Federal funding. Table 5.2.5 shows the net total economic impacts if Federal funding comprises 33% of funding sources. Under Alternative 1A, the same new demand for construction expenditures would generate net direct impacts equal to \$5.2 million in 2000 dollars after accounting for local funds that would otherwise still be spent in the regional economy with similar multiplied impacts. Adding in the indirect and induced impacts on the output of other regional firms, the net multiplied impact on output would total \$10.0 million over the construction period. Of this amount, \$3.2 million would be paid to workers as wage and salary earnings for the net new 134 person-year jobs created.

Table 5.2.5
Net “New Money” State-Wide Impacts (33% Federal Funding)

Alternative & Expenditure Category	Net Direct Expenditures	Percent Locally Procured	State-wide Net Total Impacts		
			Output (\$ M)	Earnings (\$ M)	Employment (prs-yr jobs)
1A Stand Alone (Pawtucket Layover)	\$19.6 M		\$12.5 M	\$3.8 M	154
Construction	\$5.2 M	100%	\$10.0 M	\$3.2 M	134
Vehicles	\$14.3 M	10%	\$2.5 M	\$0.6 M	20
1B Stand Alone (Westerly Layover)	\$21.4 M		\$16.0 M	\$4.9 M	201
Construction	\$7.1 M	100%	\$13.5 M	\$4.3 M	182
Vehicles	\$14.3 M	10%	\$2.5 M	\$0.6 M	20
2 ConnDOT Service Extension	\$27.0 M		\$17.0 M	\$5.2 M	209
Construction	\$7.1 M	100%	\$13.5 M	\$4.3 M	182
Vehicles	\$19.9 M	10%	\$3.5 M	\$0.9 M	27
3 MBTA Service Extension	\$16.7 M		\$12.0 M	\$3.7 M	150
Construction	\$5.2 M	100%	\$10.0 M	\$3.2 M	134
Vehicles	\$11.4 M	10%	\$2.0 M	\$0.5 M	16
3A MBTA Service Extension	\$10.3 M		\$9.7 M	\$3.0 M	124
Construction	\$4.5 M	100%	\$8.7 M	\$2.7 M	116
Vehicles	\$5.7 M	10%	\$1.0 M	\$0.3 M	8

Similarly, Table 5.2.6 shows the net total economic impacts for 50% Federal funding. Under Alternative 1A, the same new demand for construction expenditures would generate net direct impacts equal to \$7.9 million in 2000 dollars after accounting for local funds that would otherwise still be spent in the regional economy with similar multiplied impacts. Adding in the indirect and induced impacts on the output of other regional firms, the net multiplied impact on output would total \$15.1 million over the construction period. Of this amount, \$4.8 million would be paid to workers as wage and salary earnings for the net new 203 person-year jobs created.

Table 5.2.6
Net “New Money” State-Wide Impacts (50% Federal Funding)

Alternative & Expenditure Category	Net Direct Expenditures	Percent Locally Procured	State-wide Net Total Impacts		
			Output (\$ M)	Earnings (\$ M)	Employment (prs-yr jobs)
1A Stand Alone (Pawtucket Layover)	\$29.7 M		\$18.9 M	\$5.8 M	233
Construction	\$7.9 M	100%	\$15.1 M	\$4.8 M	203
Vehicles	\$21.7 M	10%	\$3.8 M	\$1.0 M	30
1B Stand Alone (Westerly Layover)	\$32.5 M		\$24.3 M	\$7.5 M	305
Construction	\$10.7 M	100%	\$20.5 M	\$6.5 M	275
Vehicles	\$21.7 M	10%	\$3.8 M	\$1.0 M	30
2 ConnDOT Service Extension	\$40.9 M		\$25.7 M	\$7.9 M	317
Construction	\$10.7 M	100%	\$20.5 M	\$6.5 M	275
Vehicles	\$30.1 M	10%	\$5.2 M	\$1.4 M	42
3 MBTA Service Extension	\$25.3 M		\$18.2 M	\$5.6 M	227
Construction	\$7.9 M	100%	\$15.1 M	\$4.8 M	203
Vehicles	\$17.3 M	10%	\$3.0 M	\$0.8 M	24
3A MBTA Service Extension	\$15.6 M		\$14.6 M	\$4.6 M	188
Construction	\$6.9 M	100%	\$13.1 M	\$4.2 M	176
Vehicles	\$8.7 M	10%	\$1.5 M	\$0.4 M	12

While the gross total economic impacts are useful for examining the overall magnitude of the project, the net total economic impact measures represent more generally accepted and appropriate estimates of the true economic impacts that would arise solely from SCCRS construction.

Ongoing Operations Impacts

Implementation of South County Commuter Rail Service (SCCRS) between Providence and Westerly would provide a number of direct, indirect and induced economic impacts related to its ongoing operations and maintenance expenditures. These effects would be realized to varying degrees throughout the State of Rhode Island, in terms of increased economic output, employment and earnings. The mechanism by which multiplied impacts are created is similar to that shown in Figure 5.2.1, with new demand for commuter rail operating and maintenance services and materials instead of capital investments.

To fully understand the nature of the economic impacts that would arise from new expenditures in commuter rail service, it is once again important to distinguish between gross and net impacts. Gross impacts refer to the full effects of O&M expenditures, whereas net impacts are the result of new money in the local economy. By separating the new or outside money impacts from normal local fund impacts that would have passed through the local economy even without SCCRS operations, we are able to gain a clearer picture of the economic impacts of the SCCRS project.

- Operating Costs**

The projected operations and maintenance costs for the three SCCRS alternatives differ in terms of operator. In Alternative 1, the service would be operated by the State of Rhode Island as a “stand alone” service, using an operator under contract to the state. This alternative has two overnight layover location options (Pawtucket and Westerly). In Alternative 2 the service would be an extension of existing commuter rail service provided by the Connecticut Department of Transportation (ConnDOT). Similarly, in Alternative 3, the service would be an extension of existing commuter rail service provided by MBTA. Both ConnDOT and MBTA contract with Amtrak for the actual provision of their services. Table 5.2.7 presents the annual O&M costs for the alternatives.

Table 5.2.7
Annual O&M Costs

Alternative Number	Alternative Name	Annual Projected O&M Costs
1A	Stand Alone 1 (Pawtucket)	\$7.3 M
1B	Stand Alone 2 (Westerly)	\$6.4 M
2	ConnDOT Extension	\$6.0 M
3	MBTA Extension	\$8.0 M
3A	MBTA Incremental Extension	\$3.1 M
Note: Costs are expressed in 2000 dollars.		

- Application of RIMS II Multipliers**

The focus of the SCCRS operational impacts is centered on the local economy defined by the State of Rhode Island. It is assumed that operation and maintenance services will be largely procured from firms

and suppliers within the State of Rhode Island (Although Alternatives 2 and 3 use out-of-state service providers, it is assumed that SCCRS maintenance would be performed at in-state layover facilities). The RIMS II multipliers selected for this calculation are from the industry classification entitled “railroads and related services,” which includes railroad operations and maintenance expenditures. Table 5.2.8 below lists this set of multipliers.

Table 5.2.8
O&M Expenditure Multipliers

Expenditure Category	BEA RIMS II Industry Classification & No.	Final Demand Multipliers		
		Output (dollars)	Earnings (dollars)	Employment (jobs)
CR O&M	65.01 Railroads and Related Services	1.6894	0.5117	16.1000

Source: U.S. Department of Commerce, Bureau of Economic Analysis

Using Alternative 1A as an example, the annual gross total impact on regional employment is equal to the annual rail O&M expenditures, in millions of 2000 dollars, multiplied by the Railroads and Related Services final demand multiplier for employment from Table 5.2.8, or

$$\$7.3 \text{ M} \times 16.1000 = 118$$

annual jobs within all sectors of the regional economy.

• **Summary of Economic Impacts**

Table 5.2.9 summarizes the gross total impacts on regional output, earnings and employment for the annual operations and maintenance each of the four alternatives. For Alternative 1A, the \$7.3 million in annual O&M expenditures increases the demand for the O&M services; this leads to additional labor and material input purchases by firms in the production of their outputs, and consumer spending of additional earnings by households across all economic sectors. The overall gross impact on regional economic output would total about \$10.5 million, with an increase in regional employment of 100 jobs, with workers earning an additional \$3.2 million in wages. The percent locally procured was calculated with the assumption that 50% of track usage fees paid to Amtrak would go back into the local economy (through services provided by Amtrak). All other operating expenditures are assumed to be 100% locally procured in Alternative 1 and 90% locally procured in Alternatives 2 and 3.

Table 5.2.9
Gross Total State-Wide Impacts

Alternative Number	Gross Direct O&M Expenditures	Percent Locally Procured	Rhode Island Gross Total Impacts		
			Output (\$M)	Earnings (\$M)	Employment (prs-yr jobs)
1A	\$7.3 M	85%	\$10.5 M	\$3.2 M	100
1B	\$6.4 M	89%	\$9.6 M	\$2.9 M	92
2	\$6.0 M	80%	\$8.1 M	\$2.5 M	77
3	\$8.0 M	79%	\$10.6 M	\$3.2M	101
3A	\$3.1 M	75%	\$3.9 M	\$1.2 M	37

Net total economic impacts can be calculated in the same manner by reducing the gross direct O&M expenditures by the amount of farebox revenues, local/regional operating funds, and any other funding that would remain in the regional economy in the absence of the SCCRS project. The remaining portion of O&M expenditures represent the new money originating outside of the region, i.e., the portion of sales tax receipts and fare revenues collected from non-residents that would be spent elsewhere without the SCCRS. As most, if not all, of the operating and maintenance costs are anticipated to be funded by local or state sources, the net total impacts arising from new money are expected to be significantly less than the gross total economic impacts presented in Table 5.2.9 above.

Though dependent upon the structure of the local/state funding sources for the project, sales tax revenues are anticipated to provide a substantial portion of O&M costs. If this is the case, new money could be seen in the form of tax revenues arising from economic activities within the State of Rhode Island by out-of-state residents as well as fare revenues paid by non-residents. Table 5.2.10 presents the net total impacts arising from new money under the assumption that only 3% of gross total O&M expenditures represents new money.

Table 5.2.10
Net “New Money” State-wide Impacts

Alternative Number	Net Direct O&M Expenditures	Percent Locally Procured	Rhode Island Net Total Impacts		
			Output (\$M)	Earnings (\$M)	Employment (prs-yr jobs)
1A	\$0.22 M	85%	\$0.31 M	\$0.10 M	3.0
1B	\$0.19 M	89%	\$0.29 M	\$0.09 M	2.8
2	\$0.18 M	80%	\$0.24 M	\$0.07 M	2.3
3	\$0.24 M	79%	\$0.32 M	\$0.10M	3.0
3A	\$0.09 M	75%	\$0.12 M	\$0.04 M	1.1

Although, in this scenario, the net total impact of SCCRS operations is of a much lower magnitude than the gross impact, it should be noted that the jobs created by O&M expenditures may be of above average value, both in terms of compensation and benefits, compared to those generated by other uses of these funds in the absence of SCCRS.

5.3 *Benefit-Cost Analysis*

Objective

The objective of this analysis is to quantify the economic benefits of implementation of SCCRS. In addition to estimating the costs and benefits of SCCRS, a benefit-cost ratio, net present value, and economic rate of return is computed for each of the operating alternatives. These measures will help decision makers decide which alternative, if any, is economically feasible.

Calculation Assumptions

Several general assumptions and inputs were developed for this analysis, including:

- 27 year evaluation period (1999-2025);
- 260 operating days per year;
- Real discount rate of 7% used in present value calculations; and
- 1998 constant dollars.

Benefits and Costs Considered

- **Vehicle Operating Costs** – costs associated with operating an automobile for a mile of travel, including both perceived and non-perceived.
- **Accident Cost Savings** – computed as the value of the highway accidents reduced net of the increase in accidents expected with additional train service.

- **Emissions Reduction Savings** – computed as the reduction in auto emissions net of additional train emission costs.
- **Travel Time Savings** – net savings in travel time for those who switch from commuting by automobile to commuting by commuter rail.

Calculations

- **Vehicle Miles Traveled**

In order to calculate the benefits associated with removing autos from the road (vehicle operating, accident, emission, and travel time cost savings), it was necessary to estimate the reduction in vehicle miles traveled (VMT). Projected ridership originating at each rail station was converted to vehicles removed from the road, based upon the following mode split assumptions: 90% private automobile and 10% regional bus. For autos, an average vehicle occupancy of 1.2 was assumed. The number of vehicles removed was then multiplied by the distance to Providence from the respective stations via the parallel roadways (I-95 and arterials). It was assumed that all passengers would be traveling to Providence or points beyond.

- **Vehicle Operating Costs**

Vehicle operating costs can be measured in a number of ways. Operating costs for a mile of travel as perceived by the driver are invariably less than the true average cost per mile factoring in fixed costs such as insurance and depreciation, and often are even less than the true marginal costs. Much debate exists about what are appropriate cost per mile factors, which cost components should be included, and when different values should be applied. A reasonable vehicle operating cost (VOC) per mile figure can be found from the recent comprehensive research of Levinson and Gillen, in which they derive per unit auto ownership cost equations from empirical data.² Their average value of \$0.223 per mile (updated to year 2000 dollars) tends to concur with most of the current literature on the topic. Applying this figure to the VMT reduction yields VOC savings.

- **Accident Cost Savings**

Accident cost savings are computed as the value of the highway accidents reduced net of the increase in accidents expected with additional train service.

- **Auto Accident Costs**

Existing data for reported accidents along the I-95 corridor from the Connecticut/Rhode Island border to Providence were averaged over three years (1994-1996) to arrive at baseline accident counts. Annually, this amounts to an average of 675 property damage only (PDO) accidents, 753 injury

² Levinson, D. and Gillen, D (1998). The Full Cost of Intercity Highway Transportation (TRB980263). Paper presented at the 77th Annual Meeting of the Transportation Research Board for forthcoming publication.

incidences, and 9 fatality incidences.³ These annual average accident counts were then applied to average traffic volumes in the corridor to yield average accident rates of 51.9 PDO accidents, 57.9 injury incidences, and 0.67 fatality incidences per 100 million vehicle miles traveled.

The National Safety Council and Federal Highway Administration have conducted studies regarding average historical cost values associated with the incidence of a fatality, injury and property damage in a vehicular accident. Table 5.3.1 shows National Safety Council accident cost value by type of accident, adjusted to 2000 dollars.

Table 5.3.1
Auto Accident Costs

National Safety Council Accident Cost Estimates (2000 Dollars¹)			
<i>Accident Event</i>	<i>Unit of Measure</i>	<i>Historical Average Cost</i>	<i>Economic Cost of Avoidance</i>
Fatality	Per Incidence	\$ 915,000	\$ 2,803,000
Nonfatal Incapacitating Injury	Per Incidence	49,000	155,000
Evident Injury	Per Incidence	17,000	42,000
Possible/Minor Injury	Per Incidence	10,400	23,000
Property Damage Only	Per Accident	1,900	1,900
Source: <i>National Safety Council (1995)</i>			
¹ Adjusted from 1995 to 2000 Dollars using the U.S. Bureau of Labor Statistics U.S. City Average Consumer Price Index for all Urban Consumers.			

For this study, the economic cost of avoidance from Table 5.3.1 for incidence of a fatality, evident injury, and property damage accident were used to value auto accidents avoided due to use of SCCRS.

- Rail Accident Costs**

The rail accident rate was calculated from data provided in the U.S. DOT/FTA Safety Management Information Statistics (SAMIS) report. For commuter rail, the three-year average rate for accidents per million vehicle miles was 1.09. The right of way for the SCCRS is currently being upgraded to 100% grade separation by Amtrak for high speed rail operations. Therefore, it was assumed that this corridor will experience a substantially lower rate of accidents than the typical commuter rail corridor. For this reason, the accident rate of 1.09 was reduced by 50% to a rate of 0.55. A comprehensive cost of \$643,190 per rail accident was used.⁴

³ It is important to note that it is possible for more than one injury or fatality *incidence* to occur in a single accident.

⁴ Miller, Ted R., Douglas, John B., and Nancy M. Pindus. *Railroad Injury: Causes, Costs, and Comparisons*. Journal of Safety and Research, Winter 1994. Crash data for 1989-90. (Updated to year 2000 dollars)

- **Emissions Reduction Savings**

Emissions reduction savings are computed as the reduction in auto emissions net of additional train emission costs.

- **Auto Emissions**

Vehicle emissions are a source of pollutants that ultimately have a degrading effect on air quality, the environment, and the health and well being of people and other organisms. While the social costs associated with vehicle emissions may be indirect in nature and difficult to quantify, they nevertheless are real and should be considered in a thorough economic evaluation.

For this study, emission rates for autos were obtained from the FHWA Surface Transportation Efficiency Analysis Model (STEAM) for four categories of pollutants: volatile organic compounds (VOC, a superset of hydrocarbons (HC)), carbon monoxide (CO), oxides of nitrogen (NO_x), and particulates under 10 microns in diameter (PM10).⁵ Values for emission costs per ton for the above were also obtained from STEAM. Applying these values to the emission rates, and adjusting to 2000 dollars yields an emission social cost of just over \$0.04 per mile.

- **Rail Emissions**

Emission rates for commuter rail were obtained from the MBTA for the four categories listed above (VOC/HC, CO, NO_x, PM10)⁶. Emission rates are given in terms of grams per brake horsepower-hour. Costs for rail emissions were obtained from STEAM. Applying these costs to the rail emission rates, and adjusting to 2000 dollars yields an emission social cost of approximately \$.06 per brake horsepower-hour.

To calculate brake horsepower-hours, the projected number of annual train miles was converted to train hours by applying an average speed of 58.4 miles per hour. Brake horsepower-hours were then calculated by multiplying the number of hours by an assumed locomotive horsepower of 3,200 and an assumed load factor of 0.4.

Emission rates for mid-day layover idling were obtained from a study conducted for the California Air Resources Board⁷. Applying emission values obtained from STEAM, an idling emission cost of \$10.15 per hour was calculated. For Alternatives 1 and 2, an average mid-day layover idling time of four hours was assumed. For Alternative 3, trains would spend the mid-day layover in the Boston area.⁸

⁵ Emission rates for average speeds of 35 mph were used to correspond with assumed average speeds for combined arterial and highway trips.

⁶ Massachusetts Bay Transportation Authority (1996). North-South Rail Link Project, Technical Report No. 7, Equipment Engineering Study.

⁷ Booz Allen & Hamilton, Inc. Locomotive Emission Study for California Air Resources Board. Emission rates provided for EMD 16-645E3B engine idling at 17 hp.

⁸ While no emissions for mid-day layover idling were included in the benefit-cost analysis for this alternative, it should be noted that additional mid-day layover emissions would occur due to the project; however, they would have a more significant impact on the air quality in the Boston metropolitan area than that in the State of Rhode Island.

⁹ OMB Circular No. A-94 Revised (Transmittal Memo No. 64), October 29, 1992.

- **Travel Time Savings**

A person's value of time for economic transportation studies is usually approximated at some fraction between one-third and three quarters of the average wage rate, though some studies have even employed the full wage rate, depending on the mix of trip purposes. Implicit in such assumptions are that work-related trips have a relatively high value of time with productivity costs equal to wage rates (plus maybe even an allowance for benefits). Commute purpose trips because they can be linked to work productivity when employees are late, and to times like additional day care costs when trips are extended, also tend to warrant a value of time close to average wage rates.

A value of time equal to two-thirds of the average Rhode Island wage rate is assumed for the SCCRS time savings calculations. Using 1997 private covered employment and wage data from the Rhode Island Department of Labor and Trade, and adjusting this value to 2000 dollars using the U.S. Consumer Price Index, the average wage rate is \$14.74 per hour. Two-thirds of this value is \$9.83 per hour.

It was assumed that the majority of the users of SCCRS will be traveling to points beyond Providence. For all alternatives except the MBTA alternative, a transfer penalty of 2 minutes was added to travel times to account for transfer to an MBTA train beyond Providence. A one-seat ride was assumed for the MBTA alternative (Alternative 3). To be conservative, we have also assumed that travel time savings will not increase over time as a result of increased congestion on the parallel roadway.

- **Evaluation Process**

- **Comparisons**

Benefit and cost dollar flows over the 27 year evaluation period were assembled to evaluate four operating alternatives:

- Alternative 1 Stand Alone Service
 - Alternative 2 ConnDOT Service Extension
 - Alternative 3 MBTA Service Extension
 - Alternative 3A MBTA Incremental Service Extension to Warwick/Wickford

Within Alternative 1, there are two options for the location of the overnight layover facility. In option 1A, the overnight layover facility would be located at Pawtucket, near Providence. In option 1B, a new facility would be constructed at southern terminus of the service at Westerly. Likewise, within Alternative 3 there is an abbreviated service option to Warwick and Wickford only.

The real discount rate measures the time value of resources in the absence of inflation or related risks, recognizing that there is a premium placed on present consumption relative to more distant points in time. A *real* discount rate is appropriate since all benefits and costs have been estimated in constant 2000 dollars. All projects that receive Federal funding are required to use a real discount rate of 7% for economic evaluation purposes; as previously indicated, this value has been adopted for our evaluation.⁹

- **Economic Feasibility Measures**

Three economic evaluation measures are employed:

- Net Present Value;
- Benefit-Cost Ratio; and
- Economic Rate of Return.

The net present value (NPV) criterion gives the magnitude of the project's economic feasibility in terms of net benefits – benefits minus costs – discounted to present value using the real discount rate assumption. The benefit-cost ratio (BCR) expresses the relation of discounted benefits to discounted costs as a measure of the extent by which a project's benefits either exceed or fall short of their associated costs. A project is considered economically feasible when the NPV exceeds \$0 and the BCR is greater than one for a given real discount rate assumption. The economic rate of return (ERR) calculates the real discount rate for the threshold of economic feasibility – the point at which the project's net benefits over time just equal its costs, in present value terms – such that the BCR = 1 and the NPV = \$0.

- **Results**

Evaluation measures for the four alternatives are shown in Table 5.3.2. The table shows a benefit-cost ratio, a net present value (NPV), and an economic rate of return (ERR) for each studied alternative.

Benefit-cost ratios range from 0.72 to 0.97 for the five alternatives. Each of the alternatives generates a rate positive economic rate of return, though insufficient to yield net benefits at a 7% real discount rate. Alternative 3A, with the highest ERR of both the full-service and abbreviated service alternatives, has a B/C ratio of 0.97, indicating that there are significant benefits present, although too low to warrant investment solely based on quantified impacts.

Table 5.3.2
Benefit-Cost Evaluation

<i>Alternative</i>	<i>Benefit-Cost Ratio</i>	<i>Net Present Value</i>	<i>Economic Rate of Return</i>
1A Stand Alone (Layover at Pawtucket)	0.75	\$ (33,307,680)	0.1%
1B Stand Alone (Layover at Westerly)	0.79	\$ (28,018,160)	1.9%
2 ConnDOT Service Extension	0.72	\$ (40,278,305)	0.9%
3 MBTA Service Extension	0.79	\$ (28,254,030)	0.3%
3A MBTA Incremental Ext. to Warwick/Wickford	0.97	\$ (1,817,184)	6.4%

Tables 5.3.3 through 5.3.7 present the economic analysis cash-flows for each alternative over the 27-year evaluation period, consisting of one year of construction (year 0 modeled as 1999), and 26 years of operation, modeled as beginning in 2000. These tables provide backup detail for the information summarized in Table 5.3.2.

- **Findings**

For each of the alternatives studied, the economic rate of return is positive. This indicates that the sum of all benefits exceeds sum of the costs before present value discounting. However, when a real discount rate of 7% is applied, the results of the analysis results indicate that none of the full-service operating alternatives approach economic feasibility. These results are reflected in the fact that the benefit-cost ratio is less than one and the net present value is negative for all alternatives at this discount rate. Alternative 3A, Incremental Service Extension to Warwick/Wickford, performs the best, with an ERR of 6.4%. Of the four full-service alternatives, Alternative 1B and 3 have the highest benefit-cost ratios and the highest net present value. However Alternative 1B, Stand Alone Service with Layover at Westerly, has the highest economic rate of return for the full-service alternatives.

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Table 5.3.3
South County Commuter Rail Economic Analysis
Alternative 1A
Stand Alone (Layover at Pawtucket)

Benefit - Cost Comparison											
Alternative 1A											
Year	Summary Project Costs				Summary Project Benefits						
	Construction/ Capital Cost	Operating and Maintenance Cost	Total Costs	Present Value of Total Costs	Vehicle Operating Cost	Net Accident Savings	Travel Time Savings	Net Emission Cost Savings	Total Benefits	Present Value of Total Benefits	
0 1999	\$ 59,311,169	\$ -	\$ 59,311,169	\$ 55,430,999	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1 2000		\$ 7,263,142	\$ 7,263,142	\$ 6,343,910	\$ 4,573,151	\$ 818,519	\$ 2,732,319	\$ 520,577	\$ 8,644,566	\$ 7,550,499	
2 2001		\$ 7,263,142	\$ 7,263,142	\$ 5,928,888	\$ 4,601,704	\$ 824,150	\$ 2,749,347	\$ 526,011	\$ 8,701,212	\$ 7,102,781	
3 2002		\$ 7,263,142	\$ 7,263,142	\$ 5,541,016	\$ 4,630,298	\$ 829,789	\$ 2,766,430	\$ 531,451	\$ 8,757,968	\$ 6,681,412	
4 2003		\$ 7,263,142	\$ 7,263,142	\$ 5,178,520	\$ 4,658,891	\$ 835,428	\$ 2,783,514	\$ 536,892	\$ 8,814,725	\$ 6,284,777	
5 2004		\$ 7,263,142	\$ 7,263,142	\$ 4,839,738	\$ 4,688,407	\$ 841,249	\$ 2,801,148	\$ 542,509	\$ 8,873,313	\$ 5,912,663	
6 2005		\$ 7,263,142	\$ 7,263,142	\$ 4,523,120	\$ 4,717,923	\$ 847,070	\$ 2,818,783	\$ 548,125	\$ 8,931,900	\$ 5,562,339	
7 2006		\$ 7,263,142	\$ 7,263,142	\$ 4,227,215	\$ 4,746,516	\$ 852,709	\$ 2,835,866	\$ 553,566	\$ 8,988,657	\$ 5,231,480	
8 2007		\$ 7,263,142	\$ 7,263,142	\$ 3,950,668	\$ 4,776,955	\$ 858,711	\$ 2,854,052	\$ 559,358	\$ 9,049,076	\$ 4,922,098	
9 2008		\$ 7,263,142	\$ 7,263,142	\$ 3,692,213	\$ 4,806,470	\$ 864,532	\$ 2,871,687	\$ 564,974	\$ 9,107,663	\$ 4,629,874	
10 2009		\$ 7,263,142	\$ 7,263,142	\$ 3,450,667	\$ 4,835,986	\$ 870,353	\$ 2,889,321	\$ 570,591	\$ 9,166,251	\$ 4,354,820	
11 2010		\$ 7,263,142	\$ 7,263,142	\$ 3,224,922	\$ 4,866,424	\$ 876,355	\$ 2,907,507	\$ 576,382	\$ 9,226,669	\$ 4,096,751	
12 2011		\$ 7,263,142	\$ 7,263,142	\$ 3,013,946	\$ 4,915,089	\$ 885,952	\$ 2,936,582	\$ 585,642	\$ 9,323,265	\$ 3,868,824	
13 2012		\$ 7,263,142	\$ 7,263,142	\$ 2,816,772	\$ 4,964,240	\$ 895,645	\$ 2,965,948	\$ 594,995	\$ 9,420,828	\$ 3,653,559	
14 2013		\$ 7,263,142	\$ 7,263,142	\$ 2,632,497	\$ 5,013,882	\$ 905,435	\$ 2,995,607	\$ 604,441	\$ 9,519,366	\$ 3,450,256	
15 2014		\$ 7,263,142	\$ 7,263,142	\$ 2,460,278	\$ 5,064,021	\$ 915,323	\$ 3,025,563	\$ 613,982	\$ 9,618,889	\$ 3,258,250	
16 2015		\$ 7,263,142	\$ 7,263,142	\$ 2,299,325	\$ 5,114,661	\$ 925,310	\$ 3,055,819	\$ 623,618	\$ 9,719,407	\$ 3,076,915	
17 2016		\$ 7,263,142	\$ 7,263,142	\$ 2,148,902	\$ 5,165,808	\$ 935,396	\$ 3,086,377	\$ 633,350	\$ 9,820,931	\$ 2,905,659	
18 2017		\$ 7,263,142	\$ 7,263,142	\$ 2,008,319	\$ 5,217,466	\$ 945,584	\$ 3,117,241	\$ 643,180	\$ 9,923,470	\$ 2,743,922	
19 2018		\$ 7,263,142	\$ 7,263,142	\$ 1,876,934	\$ 5,269,640	\$ 955,873	\$ 3,148,413	\$ 653,108	\$ 10,027,034	\$ 2,591,176	
20 2019		\$ 7,263,142	\$ 7,263,142	\$ 1,754,144	\$ 5,322,337	\$ 966,265	\$ 3,179,898	\$ 663,135	\$ 10,131,634	\$ 2,446,922	
21 2020		\$ 7,263,142	\$ 7,263,142	\$ 1,639,387	\$ 5,375,560	\$ 976,761	\$ 3,211,697	\$ 673,262	\$ 10,237,280	\$ 2,310,689	
22 2021		\$ 7,263,142	\$ 7,263,142	\$ 1,532,137	\$ 5,429,316	\$ 987,362	\$ 3,243,813	\$ 683,491	\$ 10,343,982	\$ 2,182,031	
23 2022		\$ 7,263,142	\$ 7,263,142	\$ 1,431,904	\$ 5,483,609	\$ 998,069	\$ 3,276,252	\$ 693,822	\$ 10,451,752	\$ 2,060,528	
24 2023		\$ 7,263,142	\$ 7,263,142	\$ 1,338,228	\$ 5,538,445	\$ 1,008,883	\$ 3,309,014	\$ 704,257	\$ 10,560,599	\$ 1,945,782	
25 2024		\$ 7,263,142	\$ 7,263,142	\$ 1,250,680	\$ 5,593,829	\$ 1,019,806	\$ 3,342,104	\$ 714,795	\$ 10,670,535	\$ 1,837,418	
26 2025		\$ 7,263,142	\$ 7,263,142	\$ 1,168,860	\$ 5,649,768	\$ 1,030,837	\$ 3,375,525	\$ 725,439	\$ 10,781,570	\$ 1,735,082	
Totals:	\$ 59,311,169	\$ 188,841,696	\$ 248,152,865	\$ 135,704,188	\$ 131,020,394	\$ 23,671,368	\$ 78,279,828	\$ 15,840,952	\$ 248,812,543	\$ 102,396,508	
Economic Rate of Return:										0.1%	
Benefit-Cost Ratio:										0.75	
Net Present Value:										\$ (33,307,680)	

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Table 5.3.4
South County Commuter Rail Economic Analysis
Alternative 1B
Stand Alone (Layover at Westerly)

Benefit - Cost Comparison											
Alternative 1B											
Year	Summary Project Costs				Summary Project Benefits						
	Construction/ Capital Cost	Operating and Maintenance Cost	Total Costs	Present Value of Total Costs	Vehicle Operating Cost	Net Accident Savings	Travel Time Savings	Net Emission Cost Savings	Total Benefits	Present Value of Total Benefits	
0 1999	\$ 64,923,354	\$ -	\$ 64,923,354	\$ 60,676,031	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1 2000		\$ 6,434,058	\$ 6,434,058	\$ 5,619,755	\$ 4,573,151	\$ 844,290	\$ 2,732,319	\$ 618,892	\$ 8,768,652	\$ 7,658,880	
2 2001		\$ 6,434,058	\$ 6,434,058	\$ 5,252,108	\$ 4,601,704	\$ 849,921	\$ 2,749,347	\$ 624,325	\$ 8,825,297	\$ 7,204,071	
3 2002		\$ 6,434,058	\$ 6,434,058	\$ 4,908,512	\$ 4,630,298	\$ 855,560	\$ 2,766,430	\$ 629,766	\$ 8,882,054	\$ 6,776,076	
4 2003		\$ 6,434,058	\$ 6,434,058	\$ 4,587,394	\$ 4,658,891	\$ 861,199	\$ 2,783,514	\$ 635,207	\$ 8,938,810	\$ 6,373,248	
5 2004		\$ 6,434,058	\$ 6,434,058	\$ 4,287,284	\$ 4,688,407	\$ 867,020	\$ 2,801,148	\$ 640,823	\$ 8,997,398	\$ 5,995,346	
6 2005		\$ 6,434,058	\$ 6,434,058	\$ 4,006,808	\$ 4,717,923	\$ 872,840	\$ 2,818,783	\$ 646,440	\$ 9,055,986	\$ 5,639,613	
7 2006		\$ 6,434,058	\$ 6,434,058	\$ 3,744,680	\$ 4,746,516	\$ 878,479	\$ 2,835,866	\$ 651,880	\$ 9,112,742	\$ 5,303,699	
8 2007		\$ 6,434,058	\$ 6,434,058	\$ 3,499,701	\$ 4,776,955	\$ 884,482	\$ 2,854,052	\$ 657,672	\$ 9,173,161	\$ 4,989,592	
9 2008		\$ 6,434,058	\$ 6,434,058	\$ 3,270,749	\$ 4,806,470	\$ 890,303	\$ 2,871,687	\$ 663,289	\$ 9,231,748	\$ 4,692,953	
10 2009		\$ 6,434,058	\$ 6,434,058	\$ 3,056,775	\$ 4,835,986	\$ 896,123	\$ 2,889,321	\$ 668,905	\$ 9,290,336	\$ 4,413,772	
11 2010		\$ 6,434,058	\$ 6,434,058	\$ 2,856,799	\$ 4,866,424	\$ 902,126	\$ 2,907,507	\$ 674,697	\$ 9,350,754	\$ 4,151,847	
12 2011		\$ 6,434,058	\$ 6,434,058	\$ 2,669,905	\$ 4,915,089	\$ 911,723	\$ 2,936,582	\$ 683,957	\$ 9,447,351	\$ 3,920,315	
13 2012		\$ 6,434,058	\$ 6,434,058	\$ 2,495,239	\$ 4,964,240	\$ 921,416	\$ 2,965,948	\$ 693,309	\$ 9,544,913	\$ 3,701,682	
14 2013		\$ 6,434,058	\$ 6,434,058	\$ 2,331,999	\$ 5,013,882	\$ 931,206	\$ 2,995,607	\$ 702,756	\$ 9,643,451	\$ 3,495,230	
15 2014		\$ 6,434,058	\$ 6,434,058	\$ 2,179,438	\$ 5,064,021	\$ 941,094	\$ 3,025,563	\$ 712,296	\$ 9,742,974	\$ 3,300,282	
16 2015		\$ 6,434,058	\$ 6,434,058	\$ 2,036,858	\$ 5,114,661	\$ 951,080	\$ 3,055,819	\$ 721,932	\$ 9,843,493	\$ 3,116,198	
17 2016		\$ 6,434,058	\$ 6,434,058	\$ 1,903,606	\$ 5,165,808	\$ 961,167	\$ 3,086,377	\$ 731,664	\$ 9,945,016	\$ 2,942,371	
18 2017		\$ 6,434,058	\$ 6,434,058	\$ 1,779,071	\$ 5,217,466	\$ 971,354	\$ 3,117,241	\$ 741,494	\$ 10,047,555	\$ 2,778,233	
19 2018		\$ 6,434,058	\$ 6,434,058	\$ 1,662,683	\$ 5,269,640	\$ 981,644	\$ 3,148,413	\$ 751,422	\$ 10,151,119	\$ 2,623,242	
20 2019		\$ 6,434,058	\$ 6,434,058	\$ 1,553,909	\$ 5,322,337	\$ 992,036	\$ 3,179,898	\$ 761,449	\$ 10,255,719	\$ 2,476,890	
21 2020		\$ 6,434,058	\$ 6,434,058	\$ 1,452,252	\$ 5,375,560	\$ 1,002,532	\$ 3,211,697	\$ 771,577	\$ 10,361,365	\$ 2,338,697	
22 2021		\$ 6,434,058	\$ 6,434,058	\$ 1,357,244	\$ 5,429,316	\$ 1,013,133	\$ 3,243,813	\$ 781,806	\$ 10,468,068	\$ 2,208,206	
23 2022		\$ 6,434,058	\$ 6,434,058	\$ 1,268,453	\$ 5,483,609	\$ 1,023,840	\$ 3,276,252	\$ 792,137	\$ 10,575,837	\$ 2,084,991	
24 2023		\$ 6,434,058	\$ 6,434,058	\$ 1,185,470	\$ 5,538,445	\$ 1,034,654	\$ 3,309,014	\$ 802,571	\$ 10,684,684	\$ 1,968,644	
25 2024		\$ 6,434,058	\$ 6,434,058	\$ 1,107,916	\$ 5,593,829	\$ 1,045,576	\$ 3,342,104	\$ 813,110	\$ 10,794,620	\$ 1,858,785	
26 2025		\$ 6,434,058	\$ 6,434,058	\$ 1,035,435	\$ 5,649,768	\$ 1,056,608	\$ 3,375,525	\$ 823,754	\$ 10,905,655	\$ 1,755,051	
Totals:	\$ 64,923,354	\$ 167,285,505	\$ 232,208,859	\$ 131,786,073	\$ 131,020,394	\$ 24,341,406	\$ 78,279,828	\$ 18,397,129	\$ 252,038,757	\$ 103,767,913	
Economic Rate of Return:										1.9%	
Benefit-Cost Ratio:										0.79	
Net Present Value:										\$ (28,018,160)	

RIDOT South County Commuter Rail

Table 5.3.5
South County Commuter Rail Economic Analysis
Alternative 2
ConnDOT Service Extension

Benefit - Cost Comparison											
Alternative 2											
Year	Summary Project Costs				Summary Project Benefits						
	Construction/ Capital Cost	Operating and Maintenance Cost	Total Costs	Present Value of Total Costs	Vehicle Operating Cost	Net Accident Savings	Travel Time Savings	Net Emission Cost Savings	Total Benefits	Present Value of Total Benefits	
0 1999	\$ 81,785,141	\$ -	\$ 81,785,141	\$ 76,434,711	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
1 2000		\$ 6,009,277	\$ 6,009,277	\$ 5,248,736	\$ 4,573,151	\$ 826,196	\$ 2,732,319	\$ 528,754	\$ 8,660,420	\$ 7,564,346	
2 2001		\$ 6,009,277	\$ 6,009,277	\$ 4,905,360	\$ 4,601,704	\$ 831,827	\$ 2,749,347	\$ 534,187	\$ 8,717,065	\$ 7,115,722	
3 2002		\$ 6,009,277	\$ 6,009,277	\$ 4,584,449	\$ 4,630,298	\$ 837,466	\$ 2,766,430	\$ 539,628	\$ 8,773,822	\$ 6,693,507	
4 2003		\$ 6,009,277	\$ 6,009,277	\$ 4,284,532	\$ 4,658,891	\$ 843,105	\$ 2,783,514	\$ 545,069	\$ 8,830,578	\$ 6,296,080	
5 2004		\$ 6,009,277	\$ 6,009,277	\$ 4,004,235	\$ 4,688,407	\$ 848,925	\$ 2,801,148	\$ 550,685	\$ 8,889,166	\$ 5,923,227	
6 2005		\$ 6,009,277	\$ 6,009,277	\$ 3,742,276	\$ 4,717,923	\$ 854,746	\$ 2,818,783	\$ 556,302	\$ 8,947,754	\$ 5,572,211	
7 2006		\$ 6,009,277	\$ 6,009,277	\$ 3,497,454	\$ 4,746,516	\$ 860,385	\$ 2,835,866	\$ 561,743	\$ 9,004,510	\$ 5,240,707	
8 2007		\$ 6,009,277	\$ 6,009,277	\$ 3,268,649	\$ 4,776,955	\$ 866,388	\$ 2,854,052	\$ 567,535	\$ 9,064,929	\$ 4,930,721	
9 2008		\$ 6,009,277	\$ 6,009,277	\$ 3,054,812	\$ 4,806,470	\$ 872,208	\$ 2,871,687	\$ 573,151	\$ 9,123,516	\$ 4,637,933	
10 2009		\$ 6,009,277	\$ 6,009,277	\$ 2,854,964	\$ 4,835,986	\$ 878,029	\$ 2,889,321	\$ 578,767	\$ 9,182,104	\$ 4,362,351	
11 2010		\$ 6,009,277	\$ 6,009,277	\$ 2,668,191	\$ 4,866,424	\$ 884,032	\$ 2,907,507	\$ 584,559	\$ 9,242,522	\$ 4,103,790	
12 2011		\$ 6,009,277	\$ 6,009,277	\$ 2,493,636	\$ 4,915,089	\$ 893,629	\$ 2,936,582	\$ 593,819	\$ 9,339,119	\$ 3,875,402	
13 2012		\$ 6,009,277	\$ 6,009,277	\$ 2,330,501	\$ 4,964,240	\$ 903,322	\$ 2,965,948	\$ 603,172	\$ 9,436,681	\$ 3,659,708	
14 2013		\$ 6,009,277	\$ 6,009,277	\$ 2,178,039	\$ 5,013,882	\$ 913,112	\$ 2,995,607	\$ 612,618	\$ 9,535,219	\$ 3,456,002	
15 2014		\$ 6,009,277	\$ 6,009,277	\$ 2,035,550	\$ 5,064,021	\$ 922,999	\$ 3,025,563	\$ 622,158	\$ 9,634,742	\$ 3,263,620	
16 2015		\$ 6,009,277	\$ 6,009,277	\$ 1,902,383	\$ 5,114,661	\$ 932,986	\$ 3,055,819	\$ 631,794	\$ 9,735,260	\$ 3,081,934	
17 2016		\$ 6,009,277	\$ 6,009,277	\$ 1,777,928	\$ 5,165,808	\$ 943,073	\$ 3,086,377	\$ 641,527	\$ 9,836,784	\$ 2,910,349	
18 2017		\$ 6,009,277	\$ 6,009,277	\$ 1,661,615	\$ 5,217,466	\$ 953,260	\$ 3,117,241	\$ 651,356	\$ 9,939,323	\$ 2,748,306	
19 2018		\$ 6,009,277	\$ 6,009,277	\$ 1,552,911	\$ 5,269,640	\$ 963,549	\$ 3,148,413	\$ 661,284	\$ 10,042,887	\$ 2,595,273	
20 2019		\$ 6,009,277	\$ 6,009,277	\$ 1,451,319	\$ 5,322,337	\$ 973,941	\$ 3,179,898	\$ 671,312	\$ 10,147,487	\$ 2,450,751	
21 2020		\$ 6,009,277	\$ 6,009,277	\$ 1,356,373	\$ 5,375,560	\$ 984,438	\$ 3,211,697	\$ 681,439	\$ 10,253,133	\$ 2,314,267	
22 2021		\$ 6,009,277	\$ 6,009,277	\$ 1,267,638	\$ 5,429,316	\$ 995,039	\$ 3,243,813	\$ 691,668	\$ 10,359,836	\$ 2,185,375	
23 2022		\$ 6,009,277	\$ 6,009,277	\$ 1,184,709	\$ 5,483,609	\$ 1,005,746	\$ 3,276,252	\$ 701,999	\$ 10,467,605	\$ 2,063,653	
24 2023		\$ 6,009,277	\$ 6,009,277	\$ 1,107,204	\$ 5,538,445	\$ 1,016,560	\$ 3,309,014	\$ 712,433	\$ 10,576,452	\$ 1,948,703	
25 2024		\$ 6,009,277	\$ 6,009,277	\$ 1,034,770	\$ 5,593,829	\$ 1,027,482	\$ 3,342,104	\$ 722,972	\$ 10,686,388	\$ 1,840,148	
26 2025		\$ 6,009,277	\$ 6,009,277	\$ 967,075	\$ 5,649,768	\$ 1,038,514	\$ 3,375,525	\$ 733,616	\$ 10,797,423	\$ 1,737,633	
Totals:	\$ 81,785,141	\$ 156,241,213	\$ 238,026,354	\$ 142,850,024	\$ 131,020,394	\$ 23,870,954	\$ 78,279,828	\$ 16,053,548	\$ 249,224,724	\$ 102,571,719	
Economic Rate of Return:										0.9%	
Benefit-Cost Ratio:										0.72	
Net Present Value:										\$ (40,278,305)	

RIDOT South County Commuter Rail

Table 5.3.6
South County Commuter Rail Economic Analysis
Alternative 3
MBTA Service Extension

Benefit - Cost Comparison												
Alternative 3												
Summary Project Costs						Summary Project Benefits						
		Construction/ Capital Cost	Operating and Maintenance Cost	Total Costs	Present Value of Total Costs	Vehicle Operating Cost	Net Accident Savings	Travel Time Savings	Net Emission Cost Savings	Total Benefits	Present Value of Total Benefits	
Year												
0	1999	\$ 50,534,894	\$ -	\$ 50,534,894	\$ 47,228,873	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	2000		\$ 8,001,677	\$ 8,001,677	\$ 6,988,975	\$ 4,573,151	\$ 812,488	\$ 3,154,503	\$ 529,230	\$ 9,069,372	\$ 7,921,540	
2	2001		\$ 8,001,677	\$ 8,001,677	\$ 6,531,752	\$ 4,601,704	\$ 818,119	\$ 3,174,170	\$ 534,663	\$ 9,128,657	\$ 7,451,703	
3	2002		\$ 8,001,677	\$ 8,001,677	\$ 6,104,441	\$ 4,630,298	\$ 823,758	\$ 3,193,893	\$ 540,104	\$ 9,188,053	\$ 7,009,522	
4	2003		\$ 8,001,677	\$ 8,001,677	\$ 5,705,085	\$ 4,658,891	\$ 829,397	\$ 3,213,617	\$ 545,545	\$ 9,247,450	\$ 6,593,304	
5	2004		\$ 8,001,677	\$ 8,001,677	\$ 5,331,855	\$ 4,688,407	\$ 835,217	\$ 3,233,976	\$ 551,162	\$ 9,308,762	\$ 6,202,821	
6	2005		\$ 8,001,677	\$ 8,001,677	\$ 4,983,042	\$ 4,717,923	\$ 841,038	\$ 3,254,335	\$ 556,778	\$ 9,370,074	\$ 5,835,211	
7	2006		\$ 8,001,677	\$ 8,001,677	\$ 4,657,049	\$ 4,746,516	\$ 846,677	\$ 3,274,059	\$ 562,219	\$ 9,429,471	\$ 5,488,038	
8	2007		\$ 8,001,677	\$ 8,001,677	\$ 4,352,382	\$ 4,776,955	\$ 852,680	\$ 3,295,054	\$ 568,011	\$ 9,492,699	\$ 5,163,399	
9	2008		\$ 8,001,677	\$ 8,001,677	\$ 4,067,647	\$ 4,806,470	\$ 858,501	\$ 3,315,414	\$ 573,627	\$ 9,554,012	\$ 4,856,775	
10	2009		\$ 8,001,677	\$ 8,001,677	\$ 3,801,539	\$ 4,835,986	\$ 864,321	\$ 3,335,773	\$ 579,243	\$ 9,615,324	\$ 4,568,171	
11	2010		\$ 8,001,677	\$ 8,001,677	\$ 3,552,840	\$ 4,866,424	\$ 870,324	\$ 3,356,769	\$ 585,035	\$ 9,678,553	\$ 4,297,393	
12	2011		\$ 8,001,677	\$ 8,001,677	\$ 3,320,411	\$ 4,915,089	\$ 879,921	\$ 3,390,337	\$ 594,295	\$ 9,779,642	\$ 4,058,204	
13	2012		\$ 8,001,677	\$ 8,001,677	\$ 3,103,188	\$ 4,964,240	\$ 889,614	\$ 3,424,240	\$ 603,648	\$ 9,881,741	\$ 3,832,310	
14	2013		\$ 8,001,677	\$ 8,001,677	\$ 2,900,176	\$ 5,013,882	\$ 899,404	\$ 3,458,483	\$ 613,094	\$ 9,984,862	\$ 3,618,974	
15	2014		\$ 8,001,677	\$ 8,001,677	\$ 2,710,445	\$ 5,064,021	\$ 909,292	\$ 3,493,067	\$ 622,634	\$ 10,089,014	\$ 3,417,498	
16	2015		\$ 8,001,677	\$ 8,001,677	\$ 2,533,126	\$ 5,114,661	\$ 919,278	\$ 3,527,998	\$ 632,270	\$ 10,194,208	\$ 3,227,225	
17	2016		\$ 8,001,677	\$ 8,001,677	\$ 2,367,407	\$ 5,165,808	\$ 929,365	\$ 3,563,278	\$ 642,003	\$ 10,300,453	\$ 3,047,532	
18	2017		\$ 8,001,677	\$ 8,001,677	\$ 2,212,530	\$ 5,217,466	\$ 939,552	\$ 3,598,911	\$ 651,832	\$ 10,407,761	\$ 2,877,833	
19	2018		\$ 8,001,677	\$ 8,001,677	\$ 2,067,785	\$ 5,269,640	\$ 949,841	\$ 3,634,900	\$ 661,760	\$ 10,516,142	\$ 2,717,571	
20	2019		\$ 8,001,677	\$ 8,001,677	\$ 1,932,510	\$ 5,322,337	\$ 960,234	\$ 3,671,249	\$ 671,788	\$ 10,625,607	\$ 2,566,223	
21	2020		\$ 8,001,677	\$ 8,001,677	\$ 1,806,084	\$ 5,375,560	\$ 970,730	\$ 3,707,961	\$ 681,915	\$ 10,736,166	\$ 2,423,294	
22	2021		\$ 8,001,677	\$ 8,001,677	\$ 1,687,929	\$ 5,429,316	\$ 981,331	\$ 3,745,041	\$ 692,144	\$ 10,847,831	\$ 2,288,316	
23	2022		\$ 8,001,677	\$ 8,001,677	\$ 1,577,504	\$ 5,483,609	\$ 992,038	\$ 3,782,491	\$ 702,475	\$ 10,960,613	\$ 2,160,848	
24	2023		\$ 8,001,677	\$ 8,001,677	\$ 1,474,302	\$ 5,538,445	\$ 1,002,852	\$ 3,820,316	\$ 712,909	\$ 11,074,523	\$ 2,040,472	
25	2024		\$ 8,001,677	\$ 8,001,677	\$ 1,377,853	\$ 5,593,829	\$ 1,013,774	\$ 3,858,520	\$ 723,448	\$ 11,189,571	\$ 1,926,794	
26	2025		\$ 8,001,677	\$ 8,001,677	\$ 1,287,713	\$ 5,649,768	\$ 1,024,806	\$ 3,897,105	\$ 734,092	\$ 11,305,770	\$ 1,819,442	
Totals:		\$ 50,534,894	\$ 208,043,600	\$ 258,578,494	\$ 135,664,443	\$ 131,020,394	\$ 23,514,551	\$ 90,375,461	\$ 16,065,926	\$ 260,976,332	\$ 107,410,413	
Economic Rate of Return:											0.3%	
Benefit-Cost Ratio:											0.79	
Net Present Value:											\$ (28,254,030)	

Table 5.3.7
South County Commuter Rail Economic Analysis
Alternative 3A
 Incremental MBTA Service Extension (Warwick and Wickford only)

Benefit - Cost Comparison											
Alternative 3A											
Year	Summary Project Costs				Summary Project Benefits						
	Construction/ Capital Cost	Operating and Maintenance Cost	Total Costs	Present Value of Total Costs	Vehicle Operating Cost	Net Accident Savings	Travel Time Savings	Net Emission Cost Savings	Total Benefits	Present Value of Total Benefits	
0 1999	\$ 31,131,740	\$ -	\$ 31,131,740	\$ 29,095,084	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1 2000		\$ 3,085,040	\$ 3,085,040	\$ 2,694,593	\$ 2,527,319	\$ 457,285	\$ 1,876,710	\$ 324,021	\$ 5,185,335	\$ 4,529,072	
2 2001		\$ 3,085,040	\$ 3,085,040	\$ 2,518,312	\$ 2,543,071	\$ 460,391	\$ 1,888,401	\$ 327,019	\$ 5,218,881	\$ 4,260,162	
3 2002		\$ 3,085,040	\$ 3,085,040	\$ 2,353,562	\$ 2,558,873	\$ 463,507	\$ 1,900,135	\$ 330,025	\$ 5,252,540	\$ 4,007,138	
4 2003		\$ 3,085,040	\$ 3,085,040	\$ 2,199,591	\$ 2,574,674	\$ 466,624	\$ 1,911,869	\$ 333,032	\$ 5,286,199	\$ 3,768,987	
5 2004		\$ 3,085,040	\$ 3,085,040	\$ 2,055,692	\$ 2,590,986	\$ 469,840	\$ 1,923,981	\$ 336,136	\$ 5,320,944	\$ 3,545,569	
6 2005		\$ 3,085,040	\$ 3,085,040	\$ 1,921,208	\$ 2,607,298	\$ 473,057	\$ 1,936,094	\$ 339,240	\$ 5,355,688	\$ 3,335,253	
7 2006		\$ 3,085,040	\$ 3,085,040	\$ 1,795,521	\$ 2,623,099	\$ 476,173	\$ 1,947,828	\$ 342,247	\$ 5,389,347	\$ 3,136,649	
8 2007		\$ 3,085,040	\$ 3,085,040	\$ 1,678,057	\$ 2,639,921	\$ 479,491	\$ 1,960,318	\$ 345,447	\$ 5,425,177	\$ 2,950,937	
9 2008		\$ 3,085,040	\$ 3,085,040	\$ 1,568,278	\$ 2,656,232	\$ 482,707	\$ 1,972,431	\$ 348,551	\$ 5,459,922	\$ 2,775,547	
10 2009		\$ 3,085,040	\$ 3,085,040	\$ 1,465,680	\$ 2,672,544	\$ 485,924	\$ 1,984,543	\$ 351,655	\$ 5,494,666	\$ 2,610,476	
11 2010		\$ 3,085,040	\$ 3,085,040	\$ 1,369,795	\$ 2,689,365	\$ 489,241	\$ 1,997,034	\$ 354,856	\$ 5,530,496	\$ 2,455,607	
12 2011		\$ 3,085,040	\$ 3,085,040	\$ 1,280,182	\$ 2,716,259	\$ 494,545	\$ 2,017,005	\$ 359,973	\$ 5,587,782	\$ 2,318,731	
13 2012		\$ 3,085,040	\$ 3,085,040	\$ 1,196,432	\$ 2,743,421	\$ 499,902	\$ 2,037,175	\$ 365,142	\$ 5,645,639	\$ 2,189,476	
14 2013		\$ 3,085,040	\$ 3,085,040	\$ 1,118,160	\$ 2,770,855	\$ 505,312	\$ 2,057,546	\$ 370,362	\$ 5,704,076	\$ 2,067,420	
15 2014		\$ 3,085,040	\$ 3,085,040	\$ 1,045,010	\$ 2,798,564	\$ 510,776	\$ 2,078,122	\$ 375,635	\$ 5,763,097	\$ 1,952,160	
16 2015		\$ 3,085,040	\$ 3,085,040	\$ 976,645	\$ 2,826,550	\$ 516,295	\$ 2,098,903	\$ 380,960	\$ 5,822,708	\$ 1,843,320	
17 2016		\$ 3,085,040	\$ 3,085,040	\$ 912,752	\$ 2,854,815	\$ 521,870	\$ 2,119,892	\$ 386,338	\$ 5,882,915	\$ 1,740,542	
18 2017		\$ 3,085,040	\$ 3,085,040	\$ 853,039	\$ 2,883,363	\$ 527,500	\$ 2,141,091	\$ 391,770	\$ 5,943,724	\$ 1,643,489	
19 2018		\$ 3,085,040	\$ 3,085,040	\$ 797,233	\$ 2,912,197	\$ 533,186	\$ 2,162,502	\$ 397,257	\$ 6,005,142	\$ 1,551,843	
20 2019		\$ 3,085,040	\$ 3,085,040	\$ 745,078	\$ 2,941,319	\$ 538,929	\$ 2,184,127	\$ 402,798	\$ 6,067,173	\$ 1,465,302	
21 2020		\$ 3,085,040	\$ 3,085,040	\$ 696,334	\$ 2,970,732	\$ 544,729	\$ 2,205,968	\$ 408,395	\$ 6,129,825	\$ 1,383,582	
22 2021		\$ 3,085,040	\$ 3,085,040	\$ 650,780	\$ 3,000,439	\$ 550,588	\$ 2,228,028	\$ 414,048	\$ 6,193,103	\$ 1,306,416	
23 2022		\$ 3,085,040	\$ 3,085,040	\$ 608,205	\$ 3,030,444	\$ 556,505	\$ 2,250,308	\$ 419,757	\$ 6,257,014	\$ 1,233,549	
24 2023		\$ 3,085,040	\$ 3,085,040	\$ 568,416	\$ 3,060,748	\$ 562,481	\$ 2,272,811	\$ 425,524	\$ 6,321,564	\$ 1,164,743	
25 2024		\$ 3,085,040	\$ 3,085,040	\$ 531,230	\$ 3,091,356	\$ 568,517	\$ 2,295,539	\$ 431,348	\$ 6,386,760	\$ 1,099,771	
26 2025		\$ 3,085,040	\$ 3,085,040	\$ 496,477	\$ 3,122,269	\$ 574,614	\$ 2,318,495	\$ 437,230	\$ 6,452,608	\$ 1,038,421	
Totals:	\$ 31,131,740	\$ 80,211,040	\$ 111,342,780	\$ 63,191,346	\$ 72,406,713	\$ 13,209,990	\$ 53,766,855	\$ 9,698,767	\$ 149,082,325	\$ 61,374,162	

Economic Rate of Return:	6.4%
Benefit-Cost Ratio:	0.97
Net Present Value:	\$ (1,817,184)

Sensitivity Analysis

A sensitivity analysis was performed to assess the effects of variation in the input variables considered in the benefit-cost analysis. Because none of the alternatives were deemed economically feasible with the assumed quantified inputs, sensitivity tests were conducted to determine under what more optimistic conditions would the project be deemed feasible. Table 5.3.8 shows the results of that analysis.

- **Increased Value of Time**

As explained earlier, a value of time equal to two-thirds of the average Rhode Island wage rate was assumed for the SCCRS time savings calculations. Using 1997 private covered employment and wage data from the Rhode Island Department of Labor and Trade, and adjusting this value to 2000 dollars using the U.S. Consumer Price Index, the average wage rate is \$14.74 per hour. Two-thirds of this value is \$9.83 per hour. One could argue that, because the typical patron of SCCRS is expected to be a white-collar commuter earning a wage above the Rhode Island average, 100% of the average wage would be an appropriate measure of value of time. This would be the equivalent of increasing the assumed value of two-thirds by 50%. As shown in Table 5.3.8, an increase of this magnitude in value of time would increase the highest benefit-cost ratio of the full-service alternatives to 0.93. Even with the increased value of time the full-service alternatives are still expected to yield a negative net present value. The incremental service extension (Alternative 3A) is anticipated to produce a benefit-cost ratio of 1.15 and a positive net present value of approximately \$9 million.

- **Elimination of Rail Accidents**

The right of way for the proposed commuter rail service is currently being upgraded to 100% grade-separation by Amtrak in preparation for high-speed rail service along the Northeast corridor. Our analysis assumed that the frequency of rail accidents would be reduced by 50% as a result of this grade separation. In our sensitivity analysis we looked at the impact on the benefit-cost if rail accidents are eliminated completely. Table 5.3.8 shows that the impact of this is minimal – the highest benefit-cost ratio of the full-service alternatives would be 0.80 and 0.98 for the incremental service alternative. The net present value continues to be negative for all operating alternatives.

- **Savings in Capital Costs**

It is possible that capital costs could be decreased through an assortment of mechanisms, including labor negotiations, renovation of existing structures, and recycled materials. With an assumed savings of 20% in capital costs, the benefit-cost ratio would increase slightly for all operating alternatives. Incremental service, Alternative 3A, has the highest benefit-cost ratio of 1.07, while Alternative 1B (Stand Alone Service with Layover at Westerly) would have the highest benefit-cost ratio of the full-service alternatives, at 0.87. The net present value is positive for only Alternative 3A (Incremental Service to Warwick and Wickford).

- **Track Usage Fee for Service Train Miles Only**

A significant portion of the estimated operating and maintenance costs is in the form of track usage fees paid to Amtrak. These fees were calculated based upon total train miles for each alternative, including “deadhead” miles, or those miles traveled by trains with no passengers on board. We looked at the impact of negotiating a track usage fee based only on service train miles. With such an assumed fee schedule in place, the highest full-service alternative benefit-cost ratio is 0.85, with the net present value continuing to be negative for these alternatives as well. As seen previously, Alternative 3A produces a benefit-cost ratio greater than 1, at 1.04, and a positive net present value as well.

- **Increased Ridership Projections**

Probably the most sensitive variable in the benefit-cost analysis is projected ridership. An increase in ridership affects all categories of the analysis – vehicle operating cost savings, travel time savings, accident cost savings, and emissions cost savings. An increase in ridership of 25%, for example, would yield a benefit-cost ratio of 1.0 in Alternative 3, but is still projected to produce a negative net present value over the 26-year study period. The incremental service extension (Alternative 3A) yields a benefit-cost ratio of 1.22 and has a positive net present value of just over \$14 million.

- **Increased Value of Time and Ridership Projections**

When value of time is increased by 50%, as described above, and ridership projections are increased by 25%, as described above, all of the operating alternatives, full or incremental service, become economically feasible. That is, the benefit-cost ratio for each is greater than one and net present values that vary between \$6.7 million for Alternative 2 to \$27.9 million for Alternative 3A.

Table 5.3.8
Sensitivity Analysis Summary

<i>Alternative</i>	<i>Benefit-Cost Ratio</i>	<i>Net Present Value</i>	<i>Economic Rate of Return</i>
Base Case			
1A Stand Alone (Layover at Pawtucket)	0.75	\$ (33,307,680)	0.1%
1B Stand Alone (Layover at Westerly)	0.79	\$ (28,018,160)	1.9%
2 ConnDOT Service Extension	0.72	\$ (40,278,305)	0.9%
3 MBTA Service Extension	0.79	\$ (28,254,030)	0.3%
3A MBTA Ext. to Warwick/Wickford Only	0.97	\$ (1,817,184)	6.4%
Increase Value of Time by 50%			
1A Stand Alone (Layover at Pawtucket)	0.87	\$ (17,177,063)	3.8%
1B Stand Alone (Layover at Westerly)	0.91	\$ (11,887,543)	5.0%
2 ConnDOT Service Extension	0.83	\$ (24,147,689)	3.6%
3 MBTA Service Extension	0.93	\$ (9,630,947)	5.0%
3A MBTA Ext. to Warwick/Wickford Only	1.15	\$ 9,262,205	10.0%
No Rail Accidents			
1A Stand Alone (Layover at Pawtucket)	0.76	\$ (32,386,556)	0.3%
1B Stand Alone (Layover at Westerly)	0.79	\$ (27,381,858)	2.0%
2 ConnDOT Service Extension	0.72	\$ (39,442,022)	1.0%
3 MBTA Service Extension	0.80	\$ (27,266,246)	0.6%
3A MBTA Ext. to Warwick/Wickford Only	0.98	\$ (1,362,682)	6.5%
20% Savings in Capital Costs			
1A Stand Alone (Layover at Pawtucket)	0.82	\$ (22,221,480)	1.6%
1B Stand Alone (Layover at Westerly)	0.87	\$ (15,882,954)	3.6%
2 ConnDOT Service Extension	0.80	\$ (24,991,363)	2.5%
3 MBTA Service Extension	0.85	\$ (18,808,255)	1.7%
3A MBTA Ext. to Warwick/Wickford Only	1.07	\$ 4,001,833	8.6%
Track Usage Fee for Service Train Miles Only			
1A Stand Alone (Layover at Pawtucket)	0.80	\$ (25,268,239)	2.0%
1B Stand Alone (Layover at Westerly)	0.79	\$ (27,291,981)	2.0%
2 ConnDOT Service Extension	0.72	\$ (39,562,143)	1.0%
3 MBTA Service Extension	0.85	\$ (19,618,207)	2.6%
3A MBTA Ext. to Warwick/Wickford Only	1.04	\$ 2,461,852	7.8%
Increase Ridership Projections by 25%			
1A Stand Alone (Layover at Pawtucket)	0.95	\$ (6,512,272)	5.8%
1B Stand Alone (Layover at Westerly)	0.99	\$ (1,222,752)	6.8%
2 ConnDOT Service Extension	0.91	\$ (13,482,898)	5.2%
3 MBTA Service Extension	1.00	\$ (212,389)	7.0%
3A MBTA Ext. to Warwick/Wickford Only	1.22	\$ 14,073,460	11.5%
Increase Value of Time by 50% and Ridership Projections by 25%			
1A Stand Alone (Layover at Pawtucket)	1.10	\$ 13,650,999	9.3%
1B Stand Alone (Layover at Westerly)	1.14	\$ 18,940,519	10.0%
2 ConnDOT Service Extension	1.05	\$ 6,680,373	7.9%
3 MBTA Service Extension	1.17	\$ 23,066,465	11.4%
3A MBTA Ext. to Warwick/Wickford Only	1.44	\$ 27,922,696	15.5%

5.4 Community and Environmental Benefits

The previous section of this report dealt with the estimation of the quantifiable benefit and costs of the South County Commuter Rail project. While many of the impacts of this project are readily quantifiable, others escape exacting measurement, either because they cannot be valued in dollars or because uncertainty prevents narrowing their expected dollar values within a reasonable range.

The implementation of the SCCRS project will provide many such benefits to the State of Rhode Island which are more qualitative in nature. Additional transportation options are recognized as benefits in and of themselves by giving people more choices. The SCCRS will give Rhode Island residents who commute to Providence and points beyond an additional choice. Not only will it save time for many commuters, as recognized in the previous section, but it will also provide a more consistent travel time and reliable service in all weather conditions than alternative modes. As such, its users may incur additional benefits by not having to allow as much "cushion" time for uncertainty in the use of alternative modes. The importance of a choice of modes becomes increasingly valuable as roadway facilities become more congested over time.

In the development of its long-range transportation goals, and specifically in pursuing this project, the state of Rhode Island has recognized the intangible benefits of a multi-modal transportation system and its impacts on the environment, land use, economic development, and sound financial and transportation management practices. These benefits are discussed in more detail below.

Land Use and Environment

The SCCRS is an excellent opportunity to support the land use goals of Rhode Island, one of which is to protect its limited open space. Because of its relatively small size and limited open space, Rhode Island ranks second in the nation in population density. Public transit most efficiently supports a dense population base, while automobile use in this type of environment results typically in additional congestion, lost time, and environmental costs. The SCCRS adds transportation network capacity without requiring new right-of-way or significant infrastructure development that would result in the removal of open spaces (natural or developed) or established businesses and homes.

In addition, the SCCRS can further Rhode Island's air quality goals by removing vehicles from the roadway. Currently, the entire state of Rhode Island designated as an ozone maintenance area, which provides a compelling reason to invest in alternative transportation modes that will reduce automobile use.

Economic Development

In addition to the temporary construction and on-going O&M impacts to the state economy, as discussed earlier in this report, the SCCRS would also foster planned economic development in Rhode Island. This commuter rail route will provide adjacent residents with improved access to both urban and suburban employment sites as well as retail and medical centers found in both Providence and Boston. The SCCRS offers opportunities to attract new development to the stations along the rail corridor. With thousands of daily commuters traveling into Providence and beyond, local business opportunities will increase for coffee shops, dry-cleaners and other service establishments near the proposed stations. With the right planning, the SCCRS may even be a tool for assisting in the revitalization of economically distressed or underdeveloped areas. Finally, the SCCRS will take primarily single-occupant vehicles off Rhode Island's roads during peak hours, potentially providing the external benefits of improved travel times and capacity for the remaining users, including motor-freight carriers, thus lessening transportation costs for businesses.

Financial Management

As previously discussed, the SCCRS will generate positive economic activity by bringing new money into the state economy. Despite the fact that the state may need to take on debt for this project — RIDOT has a goal of no increases to its transportation-related debt load — the agency provides an important exception for large capital projects which will have a long useful life, such as the SCCRS. As a result, it has been suggested that the sales tax be increased just slightly to pay for the operation and maintenance of the SCCRS. As tourism is a leading industry in Rhode Island, it is important to note that the results of an increase in sales tax would be augmented by visitors to Rhode Island, providing a greater benefit to residents.

Transportation Management

RIDOT is promoting better management practices for current transportation infrastructure in the state by preserving current assets. The SCCRS is an example of better management of a current transportation system as it actually upgrades capacity and improves facilities along the existing Amtrak rail line. It also provides for more productive use of existing passenger station facilities at Westerly, Kingston and Providence.

SECTION 6.0 EVALUATION OF POTENTIAL OPERATORS

6.1 Introduction

The State of Rhode Island is evaluating potential intrastate and interstate commuter rail service scenarios to serve the area between Westerly and Providence. Three options have been identified and corresponding short-term avoidable operating and maintenance cost estimates have been developed.

One service option is an intrastate “stand-alone” service that connects via across platform to Massachusetts Bay Transportation Authority (MBTA) trains at Providence. Layover facilities at Pawtucket (Alternative 1A) and Westerly (Alternative 1B) were considered. An eastward extension to Providence of the Connecticut Department of Transportation’s Shore Line East (SLE) New Haven - New London service was considered as the second option. An interstate extension of MBTA operations westward from Providence through Rhode Island is the third option.

6.2 Definition and Trends

The Transportation Research Board’s “Glossary of Public Transportation” defines commuter rail as a passenger transport service that operates within a metropolitan area on trackage that is usually part of the region’s general railroad system (e.g. also used by freight trains and or intercity trains. The operations, focused on commuters, are generally run as part of a regional system that is publicly owned or by a railroad company as part of its overall service.

Currently, some 20 commuter rail operations exist in 16 cities in the United States and Canada. State or local authorities own nearly all of these operations. The older systems tend to be the largest and are usually public owned and operated by public agencies. The newer start-up systems tend to be operated by third-party contractors.

6.3 Institutional Characteristics

All 16 operations are operated on the account of state or local authorities using publicly owned rolling stock dedicated to the commuter operation. Physical plant infrastructure may be held by public agencies or can be owned by private rail companies. Some systems operate a portion of their service on rights-of-way belonging to other rail carriers. Several agencies operate services on portions of Amtrak’s Northeast Corridor. (See Table 6.3.1).

Table 6.3.1
US Commuter Rail Operations by Operator and Ownership Of Assets

City	Operating Agency	Operator	ROW Ownership
New York City	LIRR	LIRR	Nearly 100% LIRR Some Amtrak in Queens and Manhattan
New York	Metro North	Metro North	Nearly 100% MNCR owned or leased End of one route Conrail
New York City/New Jersey	New Jersey Transit	NJ Transit	Mostly NJT Uses Amtrak NEC Uses some CR track
Chicago	Metra-IC/RI/MLW	Metra	100% or nearly 100% Metra
Chicago	Metra/BNSF	BNSF	Nearly 100% BNSF
Chicago	Metra/UP/CNW	UP/CNW	Nearly 100% UP/CNW
Boston	MBTA	Amtrak	Nearly 100% MBTA
Philadelphia	SEPTA	SEPTA	Mostly SEPTA but some routes substantial Amtrak used
San Francisco	Peninsula Commute Service	Amtrak	100% State of California
Washington DC	MARC/Amtrak/CSX	Amtrak/CSX	One route is Amtrak NEC Two routes are CSX Amtrak owns DC Terminal
Washington DC	Virginia Railway Express	Amtrak	One route is CSX One route is NS Terminal is Amtrak
Los Angeles	Metrolink	Amtrak	Mix of Public and Private ownership Public share of ownership increasing
Chicago	NICTD	NICTD	100% NICTD/Metra
Miami	TriRail	Herzog	100% State of Florida
New Haven	Shore Line East	Amtrak	Nearly 100% Amtrak NEC
San Diego	Coaster	Amtrak	North County Transit District
Dallas	DART	Herzog	Railtron (Public)
San Jose	ACE	Herzog	UP

There are five active commuter rail contract operators in the United States. Three of these five contractors are Class I private freight carriers operating over their own lines. One operator, Amtrak, is the national intercity passenger rail carrier. The remaining contractor, Herzog, is the only private operator that has no other rail freight or passenger operations base. (See Table 6.3.2).

Table 6.3.2
Contract Operator

Contract Operator	Operations
Amtrak	Boston – MBTA Washington – MARC (Penn Line) Washington – Virginia Railway Express Los Angeles – Metrolink San Francisco – Peninsula Commuter Service New Haven – Shore Line East San Diego – Coaster
Herzog	Miami – TriRail
UP/CNW (Class I Freight Railroad)	Own lines in Chicago area for Metra
BNSF (Class I Freight Railroad)	Own lines in Chicago area for Metra
CSX (Class I Freight Railroad)	Own lines in Maryland/Washington for MARC

Funding for commuter rail operations comes from a variety of sources at different properties. According to 1995 reports filed with the Federal Transit Administration, directly generated funds (fares, rents, advertising, charters, etc.) cover approximately 25% to 85% of operating and maintenance expenses across the nine transit properties which report commuter rail funding separately. Federal, State and Local funds cover varying proportions of remaining operations costs depending upon the property. Identification of funding mechanisms for this project were presented in the preceding section dealing with project financing.

6.4 Rhode Island Service Concerns

The proposed South County Commuter Rail Service would operate entirely over Northeast Corridor tracks owned and dispatched by Amtrak. This is part of the New Haven to Pawtucket/Central Corridor, which is owned outright by Amtrak. Beyond Pawtucket to Boston the Commonwealth of Massachusetts owns the tracks. Amtrak does retain certain rights and responsibilities with respect to intercity train scheduling and dispatching.

The only other rail operator at present on Amtrak's Northeast Corridor trackage in Rhode Island is the private freight carrier Providence and Worcester Railroad. These freight operating rights were inherited from the predecessor railroad, Conrail, under terms of the 1981 Northeast Rail Services Act.

In 1982, the Providence and Worcester was one of the potential operators considered by the MBTA when the original "southside" contract, held by the Boston and Maine Railroad, came due for renewal. However, a new contract was signed with the Boston and Maine instead, and they continued to be the operator. As the expiration of the second contract period on December 31, 1986 drew near, the MBTA announced that it would not renew the Boston and Maine contract owing to protracted labor disputes on the Guilford rail system. The Providence and Worcester again submitted a bid to operate the service, but the MBTA selected Amtrak instead. The P&W's present passenger carrying operations have been limited to excursions between Worcester, Massachusetts and Norwich, Connecticut. At this time P&W does not operate passenger services on the Northeast Corridor.

As part of the development phase of this project, consultant staff interviewed representatives of selected rail operators to ascertain concerns and issues pertaining to contract operation of this service.

For the purpose of the project at hand, it is assumed that services would be provided by one of the following:

- Amtrak/MBTA as an augmentation of the existing Providence-Boston commuter rail service.

- Amtrak as a separate contract akin to Shore Line East Service.
- Private Railroad or Contractor.

The predominance of Amtrak as the sole rail passenger service operator in the eastern New England region can not be ignored in anticipating the ultimate selection of an operator for the proposed service. However, both the Shore Line East and MBTA contracts will be up for renewal in the near future. It is assumed that this renewal process will present opportunities for other operators.

Outside of Rhode Island, the New England region is served by several regional and short line railroads, some operating over state-owned rights-of-way. These operations are most numerous in central and northern New England. Other than seasonal excursion service, the only non-Amtrak scheduled passenger service anticipated in the near future on these lines is the Charlotte-Burlington, Vermont commuter rail service. Operation of this 13 mile passenger segment is expected to be handled by the Vermont Railway, which is, at present, the designated freight operator on this state-owned line. The State of Vermont is still addressing issues pertaining to long-term funding of this new service.

Any general solicitation of proposals from potential operators by the state should seek to screen out those who are lacking in experience, personnel and financial resources as required by the magnitude of the proposed service. As owner of the trackage involved, Amtrak concerns with regards to the capabilities and past performance of the potential operators will have to be satisfied. It should be noted that a major financial outlay on the part of the operator will be caused by the need to procure rolling stock (locomotives and coaches), if the State of Rhode Island does not make separate arrangements for obtaining this equipment. In order not to drastically reduce the number of potential operators by virtue of their financial resources, consideration should be given to providing a revolving loan fund to assist operators in procuring the necessary rolling stock.

6.5 *Operator Contract*

Prior to commencing the process of securing the services of an operator, either by individual negotiation or formal requests for proposal, an outline of the proposed contract should be finalized. This should address the various performance parameters that will guide the operator in preparing a service plan and the associated cost proposal. The following is intended to be illustrative of the issues that should be addressed.

General Contract Concerns

Based on the previously noted discussions with potential contract operators, the following issues are of concern:

- The state (as contracting agency) must have a management staff in place to oversee the day to day operations and monitor contract performance. An early decision must be made on staffing levels based on the degree of involvement desired by the state. The state must develop a commuter rail management plan that addresses these issues.
- The contract should identify responsibility for security at the commuter rail facilities, notably parking areas. While the contractor can arrange for maintenance (sweeping, snow removal, etc.) the state needs to identify responsibility for policing. In all likelihood, this would involve the local police departments. Law enforcement on-board the trains should be addressed in the contract.
- Advertising and promotion of the service should be a joint responsibility. As a public agency, RIDOT may be able to secure free radio and TV exposure as “public service” messages. Handling of passenger

requests for information and dissemination of immediate schedule changes, delays, etc. to the public and media outlets should be via a dedicated staff position. Given the intent to focus on intermodal connections afforded by this project, this aspect of the contract should be integrated with RIPTA's statewide transit passenger information/service mandate and functions.

- A key upfront decision should address whether the contract will be structured as a lump sum or a unit cost financial arrangement. A lump sum would minimize the need for agency staff review of various cost breakdowns and details. A unit cost (plus fixed fee) arrangement would allow for closer scrutiny of the contractor's operations costs. Incremental changes in service frequency can usually be implemented with accompanying budget changes more easily via a unit cost contract.
- If the agency is to handle all revenue accounting (i.e. receipts from ticket sales, etc.) then staff will be required to perform these services. Since fare policy, selection of ticket agents and rules for fare evasion penalties tend to be driven by public and political concerns, most operators prefer to simply collect fares and immediately surrender the receipts to the contracting agency.
- Multi-year contracting is preferable. A period of three to five years is optimum. Beyond five years, a contract can become "stale". It is often easier to introduce new ideas and service planning via a new contract rather than via multiple amendments to an existing contract. A short-term contract (one to two years) tends to be more expensive because the contractor must recover fixed costs (such as mobilization, training, etc.) over a shorter time period.

Key Contract Elements

The contract should be structured to address the following key areas:

- **Basic Service Requirements**

This should identify the operator's need to manage, operate and maintain an efficient, high quality service. This can be considered as the "mission statement". The operator's liaison personnel and the corresponding public/sponsoring agency personnel should be clearly identified. All positions and corresponding functions are defined in the state and contractors' management plans.

- **Services and Goals**

Standards for operations, maintenance of equipment, maintenance of stations and management of materials should be identified in this section. The processes for fare collection and revenue accounting should be defined along with the verification process to be employed by the sponsoring agency.

- **Administrative Processes**

This section should focus on reporting guidelines and accounting standards that will be used by the operator to document the performance. A system safety plan and employee training procedures should be included. The process for handling changes in labor agreements would typically be identified in this section. This last issue tends to focus on the provision of reasonable notification by the operator followed by a joint determination of impacts.

- **Rights of Agency**

The ability of the sponsoring agency to inspect the property and equipment, with proper advance notice, would be enforced by this section. The agency would also retain the right to audit records at any time.

In the event that new equipment is provided during the contract period, the agency can require corresponding changes in maintenance standards. The ability and process associated with implementing changes in service as requested by the agency would be documented in this section. Disputes resolution could also be included within the section.

- **Cost and Budget Definition**

This section would address specifics of direct cost and overhead cost categories and the overall budget format. A budget review and approval process, including timing and responsibilities, should be identified. The procedures for dealing with budget variances and continuing operations on an interim basis without a budget should be identified as “contingency planning”.

- **Compensation**

A well-defined payment schedule should be provided. Performance incentives should be identified, possibly encompassing; on-time performances, equipment availability, ridership growth, cost under-runs/benefits sharing. Depending on the type of fare collection system, which is implemented, another performance measure would pertain to the application of a penalty for failure to collect fares.

SECTION 7.0 RHODE ISLAND PUBLIC TRANSIT AUTHORITY (RIPTA) IMPACTS AND SERVICE PLANNING

7.1 *Overview*

As part of the overall service planning for commuter rail operation between Westerly and Providence, Rhode Island, existing public transit service operations provided by the Rhode Island Public Transit Authority (RIPTA) were examined. It should be noted that during the past two years RIPTA has been in the process of conducting its own examination of its route structure, service policies and cost structure on a system-wide basis. For the purposes of this commuter rail project, only those RIPTA routes which operate in the region encompassed by the proposed passenger rail service were examined.

Throughout the text, reference is made to RIPTA service at T.F.Green Airport on Post Road in Warwick. This location simply serves as a point of reference corresponding to the proposed commuter rail station at Warwick (Hillsgrove). It should be recognized that the separate analysis now being undertaken for a proposed large scale Intermodal Transportation Center serving T.F. Green Airport and the immediate environs at Warwick may provide significant service opportunities for RIPTA and other transit providers. However, this proposed intermodal facility is presently beyond the scope of service planning reflected in this report.

7.2 *Existing Services*

RIPTA presently operates limited weekday service (one trip each way) between Westerly (Amtrak train station) and Providence (Kennedy Plaza) as a commuter express/park-ride operation for morning and evening rush hours. Intermediate stops along Interstate 95 are at Ashway, Wyoming and I-95 Exit 7. Total travel time is one hour and ten minutes, departing Westerly at 7:00 A.M. and returning to Westerly at 6:30 P.M. The route is coded as “Route 90” and as such is grouped with six other commuter express/park-ride services for the purposes of revenue and passenger reporting.

RIPTA also provides a more extensive line haul bus service between Providence and Wickford, University of Rhode Island/Kingston and Warwick/East Greenwich. The Wickford service (Route 14) provides nine daily trips in each direction with a travel time of approximately 40 minutes between Providence and Wickford. Limited service is provided on Saturdays and no service is operated on Sundays and holidays. The URI service (Route 66) provides ten trips daily in each direction with an approximate travel time between Providence and URI of 55 minutes. Limited service is provided on weekends and holidays. This route provides service to T.F.Green Airport upon request to the driver, accessing the Airport via the “airport connector” road from I-95. The East Greenwich line (Route 12) provides 20 trips daily in each direction with an average travel time between Providence and T.F. Green Airport on Post Road of 27 minutes. Saturday service consists of 12 trips in each direction and no service is provided on Sundays and holidays.

Weekday service on the Wickford Route 14 begins with a 6:51 A.M. departure from Wickford and ends with a 6:55 P.M. arrival at Wickford. This route extends beyond Wickford to serve Narragansett and Jamestown. The East Greenwich Route 12 service begins at 5:45 A.M. operating at no less than hourly intervals until 2:00 P.M. Thereafter, service operates approximately at half-hour intervals until the last trip from

Providence at 7:05 P.M. On weekends, the Providence-East Greenwich line operates hourly between 7:00 A.M. and 6:00 P.M. The University of Rhode Island Route 66 operates between 6:30 A.M. and 10:55 P.M., with the last departure from Providence at 10:00 P.M.

A summary profile of the RIPTA routes, based on information provided by RIPTA and contained in the Authority's Financial Year Statements for Years Ended June 30, 1997 and 1996 is as follows:

Table 7.2.1
Selected RIPTA Route Diagnostics

Route	Daily Bus Miles	Daily Cost	Daily Revenue	Avg. Daily Ridership
12 East Greenwich	687	\$2,198	\$803	1,551
14 Wickford/Narrag,	954	\$2,237	\$322	367
66 URI/Providence	997	\$2,205	\$271	289
90 Westerly/Prov. Park-Rides [Note]	85	\$160	\$65	33
Note: Park-Rides are reported as a combined total of seven individual routes. Westerly-Providence Park-Ride was estimated as a proportion of total reported.				

These statistics also reflect RIPTA's former "zoned" fare structure consisting of four zones, priced from Providence at \$1.00, \$1.65, \$2.00 and \$3.00. In the Fall of 1998, RIPTA converted to a single system-wide flat fare of \$1.25 under the heading "one state – one rate". The expectation is that the simplified fare structure and de-facto fare increase within the more heavily patronized former Zone 1 will serve to increase both ridership and farebox revenues.

In addition to public transit bus service, privately owned Bonanza Bus lines provides hourly service between T.F.Green Airport and Providence, connecting at Providence with routes to Boston and other points in Bonanza's New England system. As such, the Bonanza service is configured to allow long distance out-of-state passengers to access T.F.Green Airport and is not intended to serve the local Providence – Warwick market.

Outside of the proposed commuter rail service corridor, RIPTA operates two local (not destined for Providence) services which provide local connections to the URI/Kingston train station area. These are Routes 64 Newport/URI and Route 65 Galilee/URI which have an average daily ridership of 81 and 43 passengers, respectively.

7.3 Future Passenger Requirements

Ridership forecasts used in this analysis were developed in 1995 by Cambridge Systematics, Inc. as an adjunct to the Rhode Island Department of Transportation's Freight Rail Improvement Project. The forecasts presupposed a commuter rail service operating between Westerly and Providence with limited bus service remaining in the area. The forecasts assumed a commuter rail fare structure similar to the zone fares then utilized by RIPTA. Although not specified in the data output, a one-way RIPTA fare of \$3.00 between Westerly and Providence would correspond reasonably well to a one way commuter rail fare zone structure of approximately \$.10 per mile. By way of comparison, Providence to Boston on the MBTA is set at \$4.75 for a 45-mile trip. As noted previously, RIPTA has recently converted to a single system-wide fare of \$1.25. This is decidedly less than the zoned fare arrangement would be for commuter rail passengers traveling to Providence and suggests that likely diversion of bus riders to commuter rail might be less than originally forecast. However, there has been no evaluation of commuter rail ridership forecasts with respect to "fare

sensitivity” either with respect to commuter rail fares alone and/or as compared to the newly established fares for RIPTA services.

In discussions with RIPTA, it was understood that RIPTA expects to retain its present payment system of cash fares and paper (monthly passes, transfers, etc.). Implementation of an electronic “swipe” type of fare card, which could be integrated with the MBTA commuter rail system, is not foreseen. Indeed, no final decision has been made at this time as to RIPTA’s involvement with operation or management of the proposed commuter rail service. Thus, it has been assumed that passengers transferring between RIPTA buses and commuter rail will pay two separate train and bus fares.

Given the redundancies in service areas, some of these bus services were assumed to be modified in the alternatives analysis to favor commuter rail. For the proposed commuter rail operating plan, the ridership estimates prepared in 1995 assumed that RIPTA’s Providence-Westerly express service would be eliminated. It was also assumed that all service between Providence and URI/Kingston would be eliminated and replaced with enhanced local feeder bus service oriented to the Kingston train station.

The decision to eliminate the URI/Kingston service was made without benefit of the more detailed commuter rail operating schedules now available. Given the fact that the commuter rail service will be oriented towards Providence in the morning, with only one A.M. outbound trip, it is believed that RIPTA service on this route should be retained to accommodate outbound A.M. trips to (and inbound P.M. from) the URI campus.

Extensive local bus service is operated by RIPTA in the areas immediately south of Providence (Cranston and Warwick) which provides local transit riders with multiple routes into downtown Providence. Given the extensive local service coverage provided by existing RIPTA service south of Providence, it was assumed that this service would remain unchanged since it provides a higher level of transit service than would commuter rail for many of the trip origins from this area. Elimination of these routes was deemed to result in a net reduction in local transit service for which commuter rail could not provide a substitute.

The published ridership forecasts prepared for the commuter rail service alternatives in 1995 did not identify passenger access to stations by mode (typically park-ride, drop-off, bus, walk, and other). No additional ridership forecasts were performed as part of the ongoing study. Therefore, a decision was made to utilize historic modal access data as developed by the Massachusetts Bay Transportation Authority, in consultation with the Central Transportation Planning Staff, for the established commuter rail network in eastern Massachusetts. These data are contained in the report entitled MBTA System-wide Passenger Survey - Commuter Rail 1993.

For the purposes of feeder bus connections, the best performance of feeder bus services (inclusive of private minibus and vans, regional transit bus and private bus operators) was determined to be two percent of total rail passenger boardings on the MBTA’s Rockport/Ipswich line. By way of comparison, the Providence/Attleboro line, which is a candidate for extension to Westerly as one of the proposed operating plans, exhibited a feeder bus access percentage corresponding to only 0.9 percent of rail passenger volume. This includes Providence and Attleboro stations, both of which have transit bus connections.

The reasons for the relatively low contribution provided by feeder bus services are numerous, but typically, as identified in the MBTA report, bus and train schedules are not well coordinated for transfers. Even at stations where buses are scheduled for train connections, their attractiveness is limited by slow speeds or indirect routings. In consultation with RIPTA, it was decided to apply the two percent factor to the South County commuter rail forecasts to identify the potential for feeder bus services at the stations. These projections are set forth for Year 2020 operations (see Table 7.3.1), with 2020 being the “planning horizon year” for ridership forecasts. This represents an approximate 6.4 percent increase in passenger activity from start-up 2000 up to 2010, followed by a one percent per annum growth factor from 2010 to 2020.

Table 7.3.1
Rhode Island South County Commuter Rail
Outlying Stations - Passenger Boardings and Alightings
Year 2020

Station	Daily Boardings and Alightings	Access by Bus
Westerly	315	6
Kingston	1608	32
Wickford Jct.	3374	67
Warwick	533	11
Totals	5830	116
<i>Notes: Based on Cambridge Systematics, Inc. forecasts dated June 21 and December 13, 1995 based on "Commuter Rail with limited bus service" scenario</i>		
<i>Bus access assumed to be two percent of total station passenger volume per MBTA/CTPS studies</i>		

Based on these projections, Westerly would appear not to warrant local feeder bus service. Kingston feeder bus ridership would represent approximately eleven percent of the total existing Route 66 daily passenger volume. Again, it should be noted that the ridership forecasts assumed discontinuance of direct bus service between Kingston and Providence. Given the previously-stated concerns about this assumption, it may be appropriate to consider perpetuation of the existing Kingston-Providence bus services with stops at the rail station sufficing for passenger feeder to commuter rail. Additional opportunities for feeder bus service at this location may be generated by enhanced service on the Newport/URI and Galilee/URI local routes. This would suggest a feeder bus ridership in excess of established "benchmarks" and would merit evaluation by ridership forecasting.

Wickford Junction would generate the largest volume of feeder bus connections, reflecting the fact that this station generates the largest ridership of all stations included in the proposed service. The volume represents approximately 18 percent of the total existing daily ridership on Route 14 and presumably could be handled by adjusting the routing of selected trips.

Warwick would generate feeder bus usage representing less than approximately one percent of Route 12 ridership and again could be accommodated by selective rerouting of certain Route 12 trips in the morning and afternoon rush periods. It should again be emphasized that this does not reflect the possibilities afforded by the proposed Airport Intermodal Facility that is the subject of a separate analysis.

The possibility of providing off-peak service provided by buses was also evaluated. Providence, Westerly and Kingston stations are served by Amtrak Northeast Direct service throughout the midday and evening time and passengers can thus return to these destinations albeit by payment of a separate fare to Amtrak. Kingston should also continue to be served by RIPTA buses on Route 66. Warwick will continue to be served by the East Greenwich Route 12 throughout the daytime and evening, and may receive additional Amtrak service as part of the Intermodal Station development. Wickford Junction could be covered by RIPTA bus service on Route 14, although this would require a diversion from the present stop at Brown and Main Streets, or require an additional stop.

As a possible supplement to dedicated bus service during off-peak hours, consideration could be given to implementing a guaranteed ride home program (using taxi or sedan services) whereby passengers can be reimbursed for urgent/emergency trips required during time periods when commuter rail service is not operating. A similar program has been instituted by Virginia Railway Express (VREX) under the heading "Special Delivery" and may suffice in lieu of committing RIPTA resources to such a service with undetermined demand. VREX staff indicated that this service is used approximately once per day (against an approximate ridership of 7,000 passengers daily) with a cost per trip of approximately \$40.

7.4 Summary

In view of the foregoing analysis, it is proposed that the following be programmed commensurate with the inauguration of commuter rail service between Westerly and Providence:

- Elimination of Westerly- Providence Route 90 commuter express/park-ride
- Retention of the Route 66 Providence – URI/Kingston service, albeit with minor scheduling adjustments to correspond to “feeder” connections to arriving and departing commuter rail trains at Kingston Station. This represents a change in the assumptions associated with the ridership forecasts prepared for this project.
- Retention of the Wickford-Providence and East Greenwich-Providence services (Route 14 and Route 12, respectively) with minor scheduling adjustments to correspond to commuter rail schedules.

Based on the financial data presented previously, the cost impacts to RIPTA would be negligible. Elimination of Westerly commuter express service would produce an estimated daily net savings of approximately \$95 (costs of \$160 less revenue of \$65) based on the previous zone fare arrangement. Vehicle and operator requirements for the adjusted feeder routes (Routes 12, 14 and 66) should remain unchanged. It should be noted that commuter rail equipment typically offers seating and overhead storage racks not found on transit buses, which can discourage transit vehicle use by rail passengers. Specific vehicle assignment to these routes will have to conform to RIPTA’s overall fleet deployment. However, a portion of RIPTA’s fleet (selected Neoplan 8800 series vehicles) is equipped with high backed seating and overhead storage racks. These vehicles may undergo a mid-life overhaul/rebuilding in the near term. It is recommended that RIPTA and RIDOT consider assignment of these, or similarly outfitted vehicles via new acquisition, to the rail station feeder routes.

SECTION 8.0 IDENTIFICATION OF LABOR PROTECTION OBLIGATIONS

8.1 Overview

As a component of the development of an overall operations plan for the proposed commuter rail operations between Providence and Westerly, impacts to labor protection and existing mass transit were examined. The three operating scenarios, described in the service plan section of this report, do not differ in station location or ridership. Therefore, any impacts to existing mass transit systems and/or their employees will be identical. For purposes of this report the potential impacts identified will apply equally to all three operating plans.

8.2 Protection Guidelines

There are two major components of protection that a new commuter rail system in Rhode Island will need to address if funded for capital or operating costs by the Federal Transit Administration (FTA). First is the protection of existing labor forces from any harmful effect caused by the new service. Second is mitigation for any impacts caused to existing mass transit systems.

8.3 Labor Protection

Labor protection provisions are commonly referred to as 13c issues. This was the section number for the labor protection guidelines contained in the original Urban Mass Transportation Act of 1964 that established the Urban Mass Transportation Administration (UMTA). UMTA has been succeeded by the FTA and the applicable labor protection provisions are now contained in Section 5333(b) of the Federal Transit Law which became effective January 1996.

It should be noted that these protections are only applicable when grants are received from FTA. The Federal Highway Administration (FHWA) has no similar requirements for their grantees. However, even though the funds may come from FHWA, if FTA is involved in either the capital or operating portion of the project, FTA guidelines will apply. Section 24 of the FTA Master Agreement effective October 1998 details the grantee's obligations.

FTA requires that a grantee meet the requirements of Section 5333(b) of the Federal Transit Law. The section requires a grantee to protect mass transit employees from impacts to certain rights caused by the use of federal funds for the "acquisition, improvement, or operation of a transit system". While FTA administers the grant money, they request the Department of Labor (DOL) to enforce and sign-off on the applicable labor protection requirements of the grant. No grant can be made without DOL sign-off. In administering these labor protection requirements the DOL contacts the relevant unions and works with the grant applicants and the affected unions to craft an acceptable resolution.

The DOL guidelines for administering these labor protection requirements detail strict time frames. A copy of these guidelines is contained in the Appendix to this Report.

DOL starts the process by referring the grant applicants proposed terms of certification to the affected parties. These parties are given 15 days to submit objections. DOL reviews any objections and, within 10

days, determines whether the objections are sufficient to withhold certification. If the objections are sufficient, the grant applicant and the affected parties will begin negotiations of the protection terms. If, within 60 days of the original referral, agreement on appropriate protections cannot be reached, DOL will issue an interim certification which will release federal funds to the grantee. If the parties still cannot agree on appropriate terms 60 days after the interim certification, DOL will determine the terms in a final certification.

8.4 Protection For Existing Mass Transit

Protection for existing carriers affected by federally-funded projects are less clear than those for labor. Sections of the Federal Transit Law provide for private enterprise participation in the metropolitan planning process and transportation improvement programs. In addition, Section 5323 (a) (1) details the requirements to utilize Federal funds for a project that could compete with an existing mass transit provider.

- *Interest in Property. – (1) Financial assistance provided under this chapter to a State or a local governmental authority may be used to acquire an interest in, or buy property of, a private mass transportation company, for a capital project for property acquired from a private mass transportation company after July 9, 1964, or to operate mass transportation equipment or a mass transportation facility in competition with, or in addition to, transportation service provided by an existing mass transportation company, only if-*
 - *(A) the Secretary of Transportation finds the assistance is essential to a program of projects required under sections 5303-5306 of this title;*
 - *(B) the Secretary of Transportation finds that the program, to the maximum extent feasible, provides for the participation of private mass transportation companies;*
 - *(C) just compensation under State or local law will be paid to the company for its franchise or property; and*
 - *(D) the Secretary of Labor certifies that the assistance complies with section 5333(b) of this title*

However, no defined requirements for compensation to an affected private carrier are evident in the Federal requirements. The Massachusetts Bay Transportation Authority (MBTA) recently opened the Old Colony Railroad project which impacted six bus companies represented by the Southeastern Massachusetts Private Carriers Association (SEMPCA). The MBTA/SEMPCA settlement agreement was driven by specific language in the Massachusetts General Laws about MBTA/private carrier competition, rather than any Federal Requirement. A copy of the Massachusetts General Law is contained in the Appendix to this Report.

The State of Maine is in the process of instituting rail service between Portland and Boston. The new rail service will compete with the existing intercity bus service. Agreements covering the impact to the private bus carriers are in place, but no payments have been made to date.

8.5 Service Description

Within the proposed commuter rail service area only two existing mass transit providers compete directly for the same rider market. These are the Bonanza Bus Lines and the Rhode Island Public Transit Authority (RIPTA).

A description of RIPTA's service plan, and the impacts from the proposed commuter rail service are discussed in Section 7.0 of this Report. The proposed changes to RIPTA service involved four routes:

- Route 90 Westerly – Providence commuter express/park-ride. This route was proposed for elimination. The part-time positions should be absorbed by RIPTA.
- Route 66 Providence –URI/Kingston service. Route is retained with minor scheduling adjustments for the feeder service.
- Route 14 Wickford/Providence service. Route is retained with minor scheduling adjustments to correspond to commuter rail schedules.
- Route 12 East Greenwich – Providence service. Route is retained with minor scheduling adjustments to correspond to commuter rail schedules.

In summary, the institution of commuter rail service would present negligible impacts to RIPTA. Coordinated planning of bus routes with the proposed stations should enhance RIPTA's ability to provide service within the project area and avert any loss of positions.

Bonanza presents a slightly different circumstance. It is a private bus company operating interstate service. Most of Bonanza's service is outside of the proposed commuter rail service area. However, the existing route segment between T.F. Green Airport and Providence would compete directly with the proposed commuter rail system.

The current schedule for Bonanza service between Providence and T.F. Green is shown in the tables below.

**Table 8.5.1
Bonanza Inbound Service Schedule**

	Leave Boston	Arrive Providence	Arrive Kennedy Plaza	Arrive T.F. Green Airport
Daily	6:15	7:15	7:20	7:45
X7H	7:30	8:25	8:35	8:55
Daily	8:00	8:55	9:00	9:20
Daily	9:00	9:55	10:00	10:20
Daily	10:00	10:55	11:00	11:20
Daily	11:00	11:55	12:01	12:20
Daily	12:01	12:55	1:00	1:20
Daily	1:00	1:55	2:00	2:20
Daily	2:00	2:55	3:05	3:30
Daily	3:00	3:55	4:05	4:30
Daily	4:00	4:55	5:05	5:30
Daily	5:00	5:55	6:05	6:30
Daily	6:00	6:55	7:05	7:30
Daily	7:00	7:55	8:00	8:20
Daily	8:00	8:55	9:00	D9:20
Daily	9:00	9:55	10:00	10:20
Daily	11:00	11:55	12:01	D12:20
Daily	12:30	1:30	D 1:40	****

**Table 8.5.2
Bonanza Outbound Service Schedule**

	Leave T.F. Green Airport	Leave Kennedy Plaza	Leave Providence	Arrive Boston
7H	****	****	6:00	6:55
X7H	****	5:50	6:00	6:55
Daily	****	7:15	7:30	8:30
Daily	7:50	8:15	8:30	9:25
Daily	9:00	9:15	9:30	10:25
Daily	10:00	10:15	10:30	11:25
Daily	11:00	11:15	11:30	12:25
Daily	12:01	12:15	12:30	1:25
Daily	1:00	1:15	1:30	2:25
Daily	2:00	2:15	2:30	3:25
Daily	3:00	3:15	3:30	4:25
Daily	4:00	4:15	4:30	5:25
Daily	5:00	5:15	5:30	6:25
Daily	6:00	6:15	6:30	7:25
Daily	7:00	7:15	7:30	8:25
Daily3	8:00	8:15	8:30	9:25
Daily	9:00	9:15	9:30	10:25
Daily3	10:30	10:45	10:50	11:45

Under a typical commuter service operation, the new rail service should not compete for the same riders that Bonanza carries. Patrons using the commuter service would primarily be people who previously drove their car to Providence. They would now drive to the Warwick train station, park, and take the train to work. These riders would not connect to the airport, and would not detract from the existing Bonanza airport ridership. Recently, an intermodal train station has been proposed at Warwick with a people mover connection to the airport terminal. When opened, this station would attract “reverse commute” patrons, who would take the train to Warwick and utilize the easy connection to the airport terminal. Amtrak has indicated they will stop trains at the new station and a regular rail shuttle service between Providence and Warwick stations is being considered.

Under these circumstances, the rail service would be carrying airport patrons in direct competition with Bonanza service.

Bonanza has previously indicated they carry approximately 100 passengers daily between Boston and T.F. Green. Impacts to Bonanza from rail service between Boston and Providence were previously addressed in the Pilgrim Partnership II agreement between the MBTA and RIDOT that provides MBTA commuter rail service to Providence. Impacts to Bonanza from the proposed commuter rail service should be restricted to the portion of route between Providence and T.F. Green. The proposed rush hour, trip to work, type of commuter service proposed in this report should not impact the Providence/T.F. Green Bonanza route. However, if a Providence/T.F. Green rail shuttle is instituted, or rail service otherwise expanded to Warwick, Bonanza may see a measurable impact to this route.

8.6 *Potential Impacts*

Potential impacts to an existing mass transit carrier are characterized by a loss of ridership, directly attributable to the proposed commuter service and with an associated financial effect and impact to their labor force.

Discussions have been held with RIPTA and it is intended that a coordinated planning effort for feeder bus service will be undertaken with the institution of commuter service. As previously described, this coordination should result in a negligible impact and should enhance RIPTA's ability to service the project area.

Initial analysis of labor impacts indicates some rearrangement of positions, but these can be absorbed within the system. There is no indication that positions will be lost, therefore no 13c labor issues will apply. Initial discussions were held also with Bonanza Bus Lines. Subsequently Bonanza was purchased by Coach USA of Houston, Texas. Coach USA has indicated that they consider the proposed commuter service to be an impact to their bus service. Based on present bus schedules the only impact from rail service would be to the Providence to T.F. Green route. It can also reasonably be argued that even this impact should be restricted to riders originating at Providence. Riders originating from outside Providence will not change modes at Providence, but will continue on the bus to T.F. Green.

Establishing the presence of an impact can be handled in different ways. One approach would be to agree with Bonanza to monitor its route prior to rail startup and then quantify any impacts subsequently attributable to the rail service. A settlement would be based on these results. While what is attributable to the rail service may be argued, at the least this approach provides a quantifiable base for settlement negotiations. A similar approach would be used to attribute any labor protection obligations.

An alternate approach would be to perform an analysis based on bus ridership samples and project bus ridership, and any possible impacts, subsequent to the startup of rail service. This approach would provide an estimate of impact and potentially form the basis of negotiations prior to instituting the commuter service. However, it should be understood that these are projections based on numerous variables, whereas the first approach is based on hard data. The criteria used to perform this analysis is critical and requires a defined commuter rail service plan. Items that need to be considered are:

- Train and bus service frequency between Providence and T.F. Green.
- Fare differential between train and bus.
- Origin and destination within Providence for existing bus patrons.
- Existing bus ridership and revenue by route segment.

The closer rail service frequency and fares come to the bus, the more competitive it becomes. All things being equal, the one-seat ride and front door drop-off provided by the bus gives it an inherent advantage over the train/people mover combination for patrons.

Whichever approach is used, it is important for RIDOT to contact Bonanza/Coach USA early in the process to identify their issues and gather detailed information. It will also demonstrate RIDOT's willingness to work with the bus carrier to resolve any impacts resulting from the proposed commuter rail service.

8.7 *Mitigation*

There are no compensation formulas defined for bus carrier impacts caused by Federally-funded competition. In the MBTA/SEMPCA agreement, compensation was distributed based on each bus companies projected ridership loss. It must be remembered that the bus corridors in the Old Colony Project area provided the only alternative to automobile travel. Given the highway bottlenecks, the availability of bus/HOV lanes, and lengthy rush hour traffic delays, a significant portion of the corridors ridership was trips to work. It is highly unlikely that the Providence/T.F. Green bus route would be eliminated due to rail service. Providence is the focal point for patrons coming from all over New England to connect to the T.F. Green Airport. At worst, under the most competitive rail scenario, only local riders originating or destined for Providence should be impacted. Based on a one-way fare of six dollars from Providence to T.F. Green, a small ridership loss over a six-year period would not amount to a lot of money. What is considered, and more likely, is rail ridership to the airport coming from single-occupant automobiles. This should produce an overall increase in the transit market, rather than rail taking a portion of the bus ridership in a fixed market.

SECTION 9.0 FINDINGS AND RECOMMENDATIONS

9.1 Findings

The three basic alternatives considered in the report were arranged to provide the same level of passenger service within the Providence to Westerly corridor. The mechanics needed to achieve this level of service differed between the options. Recently an alternative providing an incremental approach to Alternative 3 has been progressed. The service alternatives under consideration for the proposed SCCRS are as follows:

- Alternative 1 - an intrastate “stand-alone” service that connects via cross-platform to MBTA trains at Providence. Layover facilities at Pawtucket (Alternative 1A) and at Westerly (Alternative 1B) were considered. This service provides five train peak-period service over the full corridor. This service would be managed by RIDOT (or equivalent agency) and the train service would be contracted out to an operator. This alternative would only have to coordinate with Amtrak, eliminating interferences with MBTA or CDOT existing schedules. However, because it is independent, it will not share in the equipment and operation efficiencies present in the existing systems for MBTA or CDOT. It also requires Rhode Island to establish a comprehensive management structure to monitor the service and its operator.
- Alternative 2 - an eastward extension of the CDOT Shore Line East New Haven to New London service with a layover facility proposed in Westerly. This service provides five train peak-period service over the full corridor. Although the system will operate, the market for CDOT is south to New Haven and eventually New York, while RIDOT wants to go north to Providence. This difference forces the layover facility to be in Westerly so trains can operate in both directions in the morning, and requires the mid-day layover at Pawtucket as well. The alternative does take advantage of the equipment and operational efficiencies in the existing Shore Line East service. It would require RIDOT to negotiate an operating agreement with CDOT, similar to the existing Pilgrim Partnership with MBTA.
- Alternative 3 - an interstate extension of MBTA operations westward from Providence with a layover facility (under a separate program) in Pawtucket, R.I. This service provides five train peak-period service over the full corridor. This alternative takes advantage of the MBTA’s existing operations north in the morning and south in the evening, matching the Rhode Island commuter pattern. The disadvantage is the Attleboro Line is very heavily traveled and Rhode Island commuters only add to that crunch if they travel north of Providence. As an advantage, RIDOT already has an established arrangement with the MBTA operating trains into Providence, and political agreement to pursue service further south to Warwick and Wickford. The new layover at Pawtucket lends some added benefit to the equipment and operational efficiencies already present with the MBTA service into Providence.
- As a result of recent discussions with the MBTA, an Alternative 3A for incremental staged expansion of existing MBTA service to Warwick and Wickford Junction was evaluated. This service differs slightly from the other alternatives in that it will provide an eight train service rather than the five train service for the other options. The additional three trains were required to provide a reverse commute connection to the T.F. Green Airport. The airport flight rush hours differ slightly from traditional commuter rail rush hours, requiring additional trains to connect. This alternative resulted from the RIDOT/MBTA discussions for service to the new Warwick Station at the T.F. Green Airport. The Warwick Station will be built independent of the SCCRS and Amtrak has already committed to stopping

their Acela Regional trains there. This alternative takes advantage of the existing investment in the Pawtucket Layover and the Warwick Station, and will garner approximately 70% of the total SCCRS projected ridership.

The major points of each alternative have been discussed above. Financial and economic issues such as capital and operations and maintenance costs are also a critical component in the decision process. The major financial elements are shown in the table below.

SCCRS Major Financial and Economic Elements

Alternative	Capital Cost	Annual O&M Cost	Total Funding	Annual RI Assistance	RI Gross Output	Benefit Cost Ratio
1A	\$55.9 M	\$6.9 M	\$56.6 M	\$6.8 M	\$36 M	0.76
1B	\$61.2 M	\$6.1 M	\$62.0 M	\$6.45M	\$46 M	0.79
2	\$76.9 M	\$5.7 M	\$77.9 M	\$7.1 M	\$49 M	0.72
3	\$47.5 M	\$7.6 M	\$48.1 M	\$6.95 M	\$34 M	0.80
3A*	\$29.4 M	\$2.9 M	\$29.8 M	\$3.3 M	\$31 M	±1.0

* Costs shown are based on current negotiations with the MBTA and preliminary analysis of financial and economic factors

9.2 Recommendations

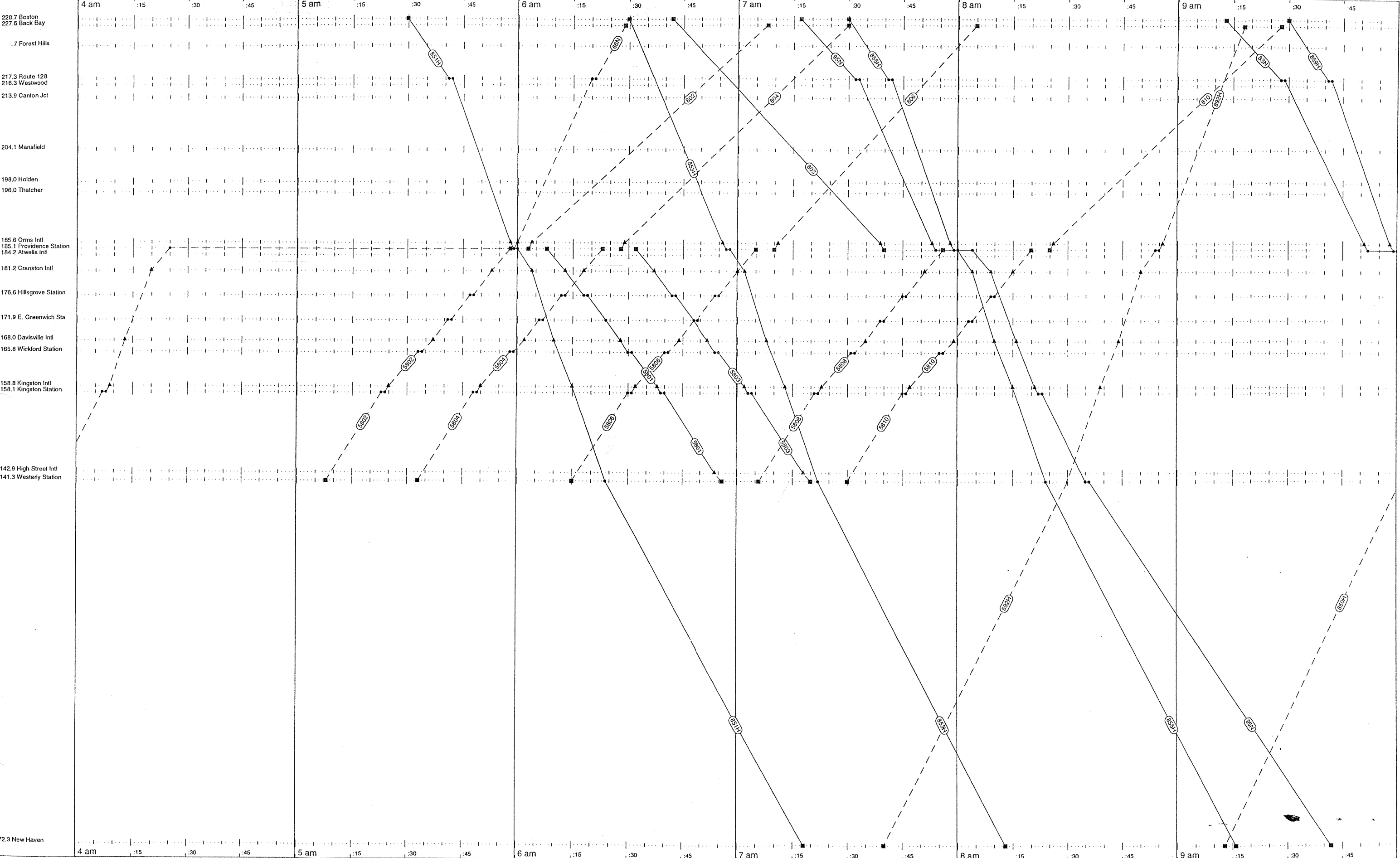
Based on the review and analysis performed the following alternative is recommended for service over the full corridor:

- Alternative 3 - Showing the highest Benefit-Cost Ratio, although the annual O&M is slightly higher than other options, it also is the best fit for the Rhode Island commuter. Existing operating agreement, investment in the Pawtucket Layover, and other connections create an added advantage.

However, the best Benefit-Cost Ratio is Alternative 3A. This alternative only covers the first 20 miles of the corridor, but garners 70% of the total ridership at 60% of the capital cost and only 45% of the annual O&M cost. Additionally, those costs cover an eight train service versus a five train service for the other alternatives and provides a reverse commute connection to T.F. Green Airport as well. This option provides RIDOT with the best bang for their buck and, due to the existing Pilgrim Partnership Agreement, should be able to get on-line quicker than the other options.

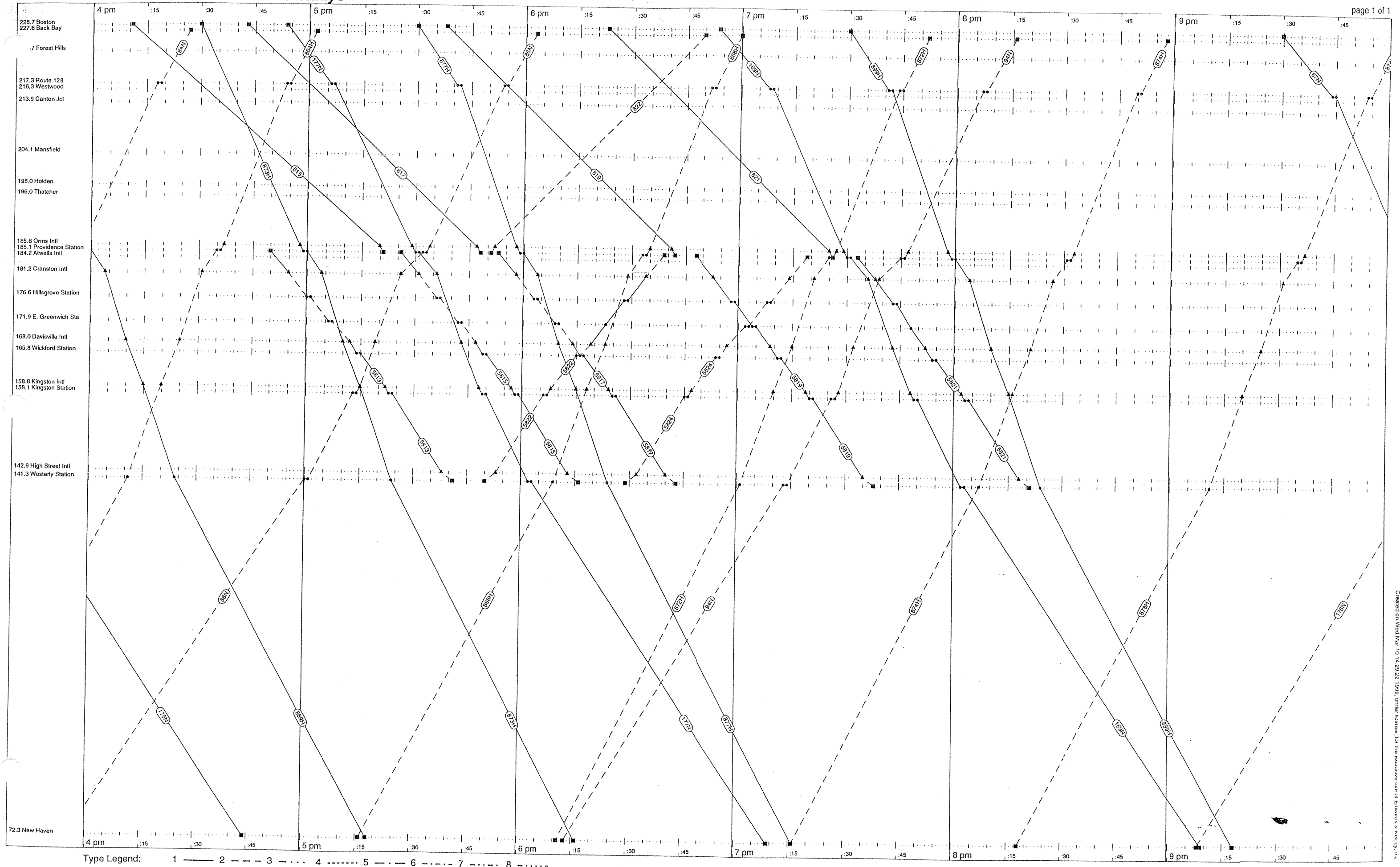
STRINGLINES AND TIMETABLES

SCCRS Stand-alone-34 Train TT - Weekdays



Type Legend: 1 — 2 - - - 3 . . . 4 - - - - 5 - - - - - 6 - - - - - 7 - - - - - 8 - - - - -

SCCRS Stand-alone-34 Train TT - Weekdays



SCCRS Stand-alone-34 Train TT - Weekdays - Westbound

Departure Times	Tran	851H	5801	5803	853H	803	95N	855H	83N	859H	861H	85N	865H	175N	869H	873H	815	177N	817
		a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
228.7 Boston		L5:30			L6:30	L6:42	L7:17	L7:30	L9:13	L9:30	L11:30	L11:50	L1:30	L2:31	L3:30	L4:30	L4:11	L4:54	L4:43
227.6 Back Bay		↗					↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗
223.7 Forest Hills		↗					↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗
217.3 Route 128		s5:42					s7:33	s7:42	s9:29	s9:42	s11:42	s12:05	s1:42	s2:44	s3:42			s5:07	
216.3 Westwood		↗																	↗
213.9 Canton Jct		↗																	↗
204.1 Mansfield		↗																	↗
198.0 Holden		↗																	↗
195.0 Thatcher		↗																	↗
185.6 Orms Inrl		5:58			6:56	7:39	7:53	7:58	9:51	9:58	11:58	12:25	1:58	3:04	3:58	4:58	5:20	5:29	5:47
185.1 Providence Station		s6:00	L6:08	L6:32	s6:58	A7:40	s8:04	s8:00	s10:04	s10:00	s12:00	s12:27	s2:00	s3:06	s4:00	s5:00	A5:21	s5:31	A5:48
184.2 Alwells Inrl		↗	↗	↗	↗		↗	↗	↗	↗	↗	↗	↗	↗	↗	↗		↗	
181.2 Cranston Inrl		6:04	6:13	6:37	7:02		8:09	8:04	10:09	10:04	12:04	12:32	2:04	3:11	4:04	5:04		5:36	
176.6 Hillsgrove Station		↗	s6:19	s6:43			↗	↗	↗	↗	↗	↗	↗	↗	↗	↗		↗	
171.9 E. Greenwich Sta		↗	6:24	6:48	↗		↗	↗	↗	↗	↗	↗	↗	↗	↗	↗		↗	
168.0 Davisville Inrl		6:10	6:28	6:52	7:08		8:16	8:10	10:16	10:10	12:10	12:39	2:10	3:18	4:10	5:10		5:43	
165.8 Wickford Station		↗	s6:31	s6:55	↗		↗	↗	↗	↗	↗	↗	↗	↗	↗	↗		↗	
158.8 Kingston Inrl		6:15	6:38	7:02	7:13		8:21	8:15	10:21	10:15	12:15	12:44	2:15	3:23	4:15	5:15		5:48	
158.1 Kingston Station		↗	s6:40	s7:04	↗		s8:23	↗	s10:23	↗	↗	s12:46	↗	s3:25	↗	↗		s5:50	
142.9 High Street Inrl		↗	6:54	7:18	↗		↗	↗	↗	↗	↗	↗	↗	↗	↗	↗		↗	
141.3 Westerly Station		6:24	A6:56	A7:20	7:22		s8:36	8:24	s10:36	10:24	12:24	s12:59	2:24	s3:38	4:24	5:24		s6:03	
72.3 New Haven		A7:18			A8:13		A9:42	A9:16	A11:42	A11:16	A1:18	A2:05	A3:16	A4:44	A5:18	A6:16		A7:09	
Total time:		1:48	:48	:48	1:43	:58	2:25	1:46	2:29	1:46	1:48	2:15	1:46	2:13	1:48	1:46	1:10	2:15	1:05

SCCRS Stand-alone-34 Train TT - Weekdays - Westbound

Departure Times	Train	5813 p.m.	877H p.m.	819 p.m.	5815 p.m.	5817 p.m.	821 p.m.	5819 p.m.	5821 p.m.	169N p.m.	889H p.m.	67N p.m.							
228.7 Boston			L5:30	L5:38			L6:23			L6:54	L7:30	L9:30							
227.6 Back Bay			↗	↗			↗			↗	↗	↗							
223.7 Forest Hills			↗	↗			↗			↗	↗	↗							
217.3 Route 128			s5:42				s7:09		s7:42		s9:45								
216.3 Westwood			↗	↗			↗			↗	↗	↗							
213.9 Canton Jct			↗	↗			↗			↗	↗	↗							
204.1 Mansfield			↗	↗			↗			↗	↗	↗							
198.0 Holden			↗	↗			↗			↗	↗	↗							
196.0 Thatcher			↗	↗			↗			↗	↗	↗							
185.6 Orms Inrl			5:58	6:41			7:25		7:29		7:58	10:05							
185.1 Providence Station		L4:50	s6:00	A6:42	L5:26	L5:53	A7:26	L6:48	L7:33	s7:31	s8:00	s10:07							
184.2 Altwells Inrl		↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗							
181.2 Cranston Inrl		4:55	6:04		5:31	5:58		6:53	7:38	7:36	8:04	10:12							
176.6 Hillsgrove Station		s5:01	↗		s5:37	s6:04		s6:59	s7:44	↗	↗	↗							
171.9 E. Greenwich Sta		s5:07	↗		s5:43	s6:10		s7:05	s7:48	↗	↗	↗							
168.0 Davisville Inrl		5:12	6:10		5:47	6:14		7:09	7:52	7:43	8:10	10:19							
165.8 Wickford Station		s5:15	↗		s5:50	s6:17		s7:12	s7:55	↗	↗	↗							
158.8 Kingston Inrl		5:22	6:15		5:57	6:24		7:19	8:02	7:48	8:15	10:24							
158.1 Kingston Station		s5:24	↗		s5:59	s6:26		s7:21	s8:04	s7:50	↗	s10:26							
142.9 High Street Inrl		5:38	↗		6:13	6:40		7:35	8:18	↗	↗	↗							
141.3 Westerly Station		A5:41	6:24		A6:16	A6:43		A7:38	A8:21	s8:03	8:24	s10:39							
72.3 New Haven			A7:16							A9:09	A9:18	A11:43							
Total time:		:51	1:46	1:04	:50	:50	1:03	:50	:48	2:15	1:48	2:13							

SCCRS Stand-alone-34 Train TT - Weekdays - Eastbound

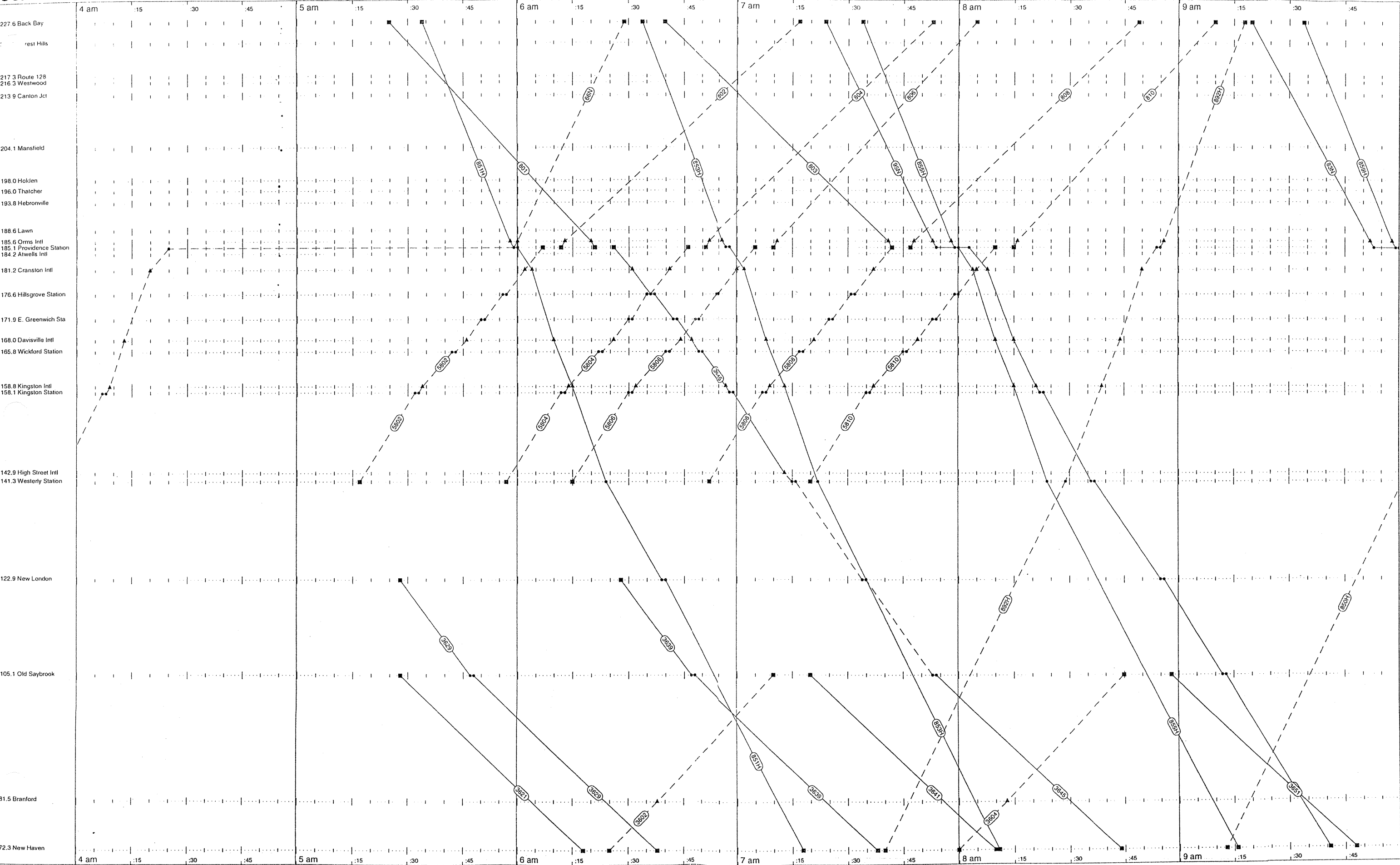
Departure Times		Train	66N	5802	5804	5806	802	804	806	5808	5810	810	892H	850H	852H	170N	856H	172N	860H	84N	
			a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	p.m.	p.m.
72.3	New Haven		L2:54																		
141.3	Westerly Station		s3:55	L5:08	L5:33	L6:15				L7:06	L7:30		L7:40	L9:13	L10:13	L10:16	L11:15	L11:54	L1:15	L2:19	
142.9	High Street Inlt		↓	↓	↓	↓				↓	↓		↓	↓	↓	s11:22	12:05	s1:00	↓	s3:25	
156.1	Kingston Station		s4:08	s5:24	s5:49	s6:31				s7:22	7:46		↓	↓	↓	s11:35	↓	s1:13	↓	s3:38	
158.8	Kingston Inlt		4:09	5:25	5:50	6:32				7:23	7:47		8:39	10:10	11:12	11:36	12:14	1:14	2:14	3:39	
165.8	Wickford Station		↓	s5:34	s5:59	s6:41				s7:32	7:56		↓	↓	↓	↓	↓	↓	↓	↓	
168.0	Davysville Inlt		4:13	5:37	6:02	6:44				7:35	7:59		8:44	10:15	11:17	11:40	12:19	1:18	2:19	3:43	
171.9	E. Greenwich Sta			s5:42	s6:07	s6:49				s7:40	8:04		↓	↓	↓	↓	↓	↓	↓	↓	
176.6	Hillsgrove Station		↓	s5:48	s6:13	s6:55				s7:46	8:10		↓	↓	↓	↓	↓	↓	↓	↓	
181.2	Cranston Inlt		4:20	5:53	6:18	7:00				7:51	8:15		↓	↓	↓	↓	↓	↓	↓	↓	
184.2	Attwells Inlt		↓	↓	↓	↓				↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	
185.1	Providence Station		s5:59	A5:58	A6:23	A7:05				A7:56	A8:20										
185.6	Orms Inlt		6:00				L6:03	L6:28	L7:10			L8:25	s6:55	s10:26	s11:28	s11:54	s12:30	s1:32	s2:30	s3:57	
196.0	Thatcher		↓				6:04	6:29	7:11			8:26	8:56	10:27	11:29	11:55	12:31	1:33	2:31	3:58	
198.0	Holden						↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	↓	
204.1	Mansfield						↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	↓	
213.9	Canton Jct						↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	↓	
216.3	Westwood		↓				↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	↓	
217.3	Route 128		s6:21				↓	↓	↓			↓	s10:45	s11:47	s12:16	s12:49	s1:54	s2:49	s4:19	↓	
223.7	Forest Hills		↓				↓	↓	↓			↓	↓	↓	↓	↓	↓	↓	↓	↓	
227.6	Back Bay		A6:29				A7:08	A7:30	A8:05			A9:28	A9:18	A10:52	A11:54	A12:24	A12:56	A2:02	A2:56	A4:27	
228.7	Boston																				
Total time:			3:35	.50	.50	.50	1:05	1:02	.55	.50	.50	1:03	1:38	1:39	1:41	2:08	1:41	2:08	1:41	2:08	

SCCRS Stand-alone-34 Train TT - Weekdays - Eastbound

Departure Times		Train	864H p.m.	86N p.m.	822 p.m.	868H p.m.	5822 p.m.	5824 p.m.	872H p.m.	94N p.m.	874H p.m.	878H p.m.	176N p.m.						
72.3 New Haven	L3:18	L3:55		L5:16			L6:11	L6:13	L7:16	L8:18	L9:08								
141.3 Westerly Station	4:11	s5:01		6:09	L5:50	L6:29	7:01	s7:14	8:07	9:11	s10:09								
142.9 High Street Inlt					5:53	6:32													
158.1 Kingston Station		s5:14			s6:07	s6:46		s7:27					s10:22						
158.8 Kingston Inlt	4:20	5:15		6:18	6:08	6:47	7:10	7:28	8:16	9:20	10:23								
165.8 Wickford Station					s6:16	s6:55													
168.0 Davysville Inlt	4:25	5:19		6:23	6:19	6:57	7:15	7:32	8:21	9:25	10:27								
171.9 E. Greenwich Sta					6:23	s7:03													
176.6 Hillsgrove Station					s6:29	s7:09													
181.2 Cranston Inlt	4:31	5:26		6:29	6:34	7:14	7:21	7:39	8:27	9:31	10:34								
184.2 Attwells Inlt																			
185.1 Providence Station	s4:36	s5:33	L5:51	s6:34	A6:39	A7:19	s7:26	s7:46	s8:32	s9:36	s10:41								
185.6 Orms Inlt	4:37	5:34	5:52	6:35			7:27	7:47	8:33	9:37	10:42								
196.0 Thatcher																			
198.0 Holden																			
204.1 Mansfield																			
213.9 Canton Jct																			
216.3 Westwood																			
217.3 Route 128	s4:55	s5:55		s6:53			s7:45	s8:08	s8:51	s9:55	s11:03								
223.7 Forest Hills																			
227.6 Back Bay	A5:02	A6:03	A6:50	A7:00			A7:52	A8:16	A8:58	A10:02	A11:11								
228.7 Boston																			
Total time:	1:44	2:08	.59	1:44	.49	.50	1:41	2:03	1:42	1:44	2:03								

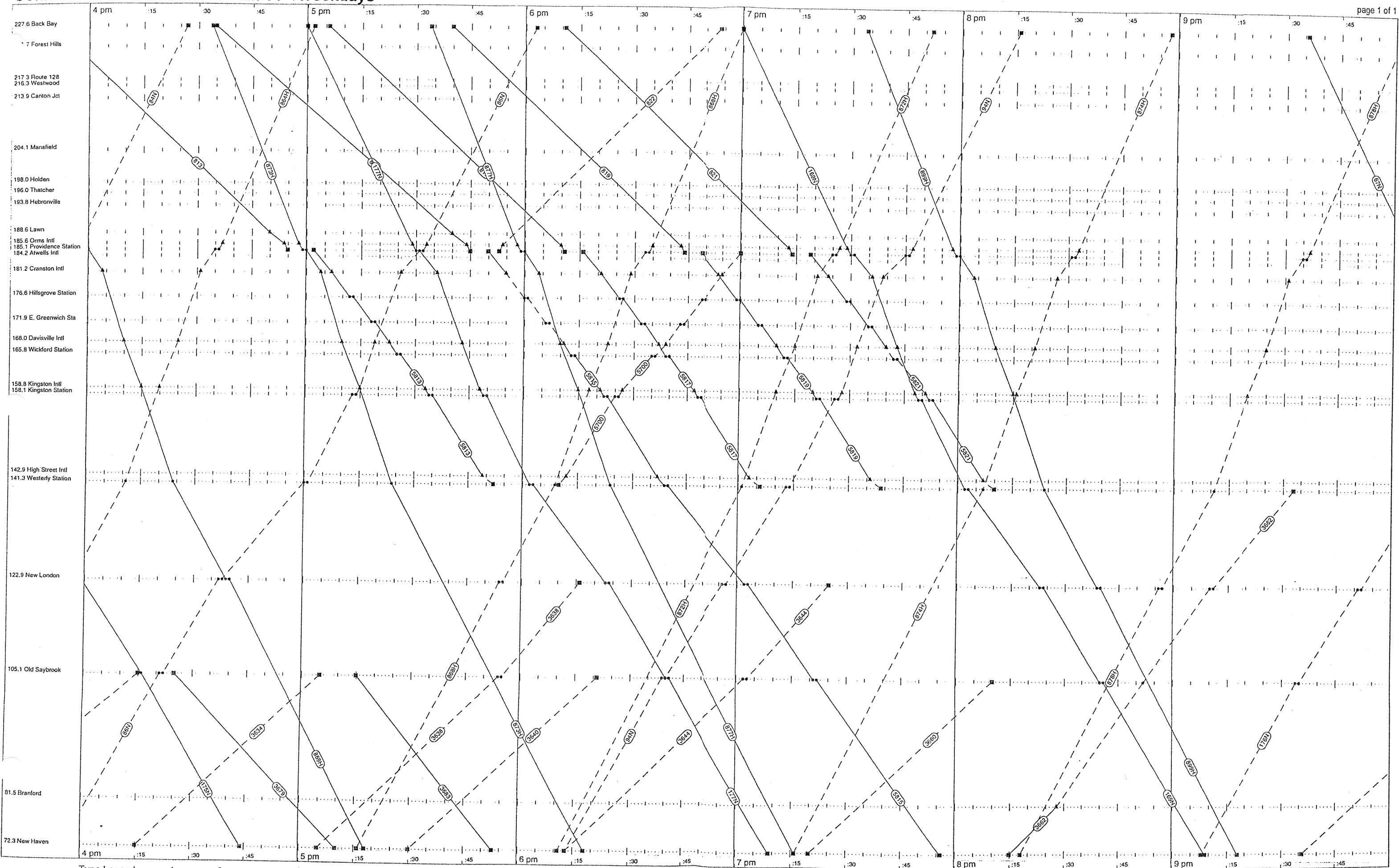
page 2 of 1

ConnDOT SERVICE EXT-34 Train TT - Weekdays



Type Legend: 1 — 2 - - 3 - - - 4 - - - - 5 - - - - - 6 - - - - - 7 - - - - - 8 - - - - -

ConnDOT SERVICE EXT-34 Train TT - Weekdays



ConndOT SERVICE EXT-34 Train TT - Weekdays - Westbound

Departure Times	Train	801	3621	3629	851H	3645	3639	853H	803	3641	95N	855H	3651	83N	859H	861H	85N	865H	175N
		a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	p.m.	p.m.
227.6 Back Bay		L5:25			L5:34			L6:34	L6:40		L7:24	L7:34		L9:20	L9:34	L11:34	L11:56	L1:34	L2:35
223.7 Forest Hills																			
217.3 Route 128																			
216.3 Westwood																			
213.9 Canton Jct																			
204.1 Mansfield																			
199.0 Holden																			
196.0 Thatcher																			
193.8 Hebronville																			
188.6 Lawn																			
185.6 Orms Intl		6:20			5:58			6:56	7:41		7:53	7:58		9:52	9:58	11:58	12:25	1:58	3:04
185.1 Providence Station		A6:21			56:00			56:58	A7:42		58:03	58:00		510:04	510:00	512:00	512:27	52:00	53:06
184.2 Attwells Intl																			
181.2 Cranston Intl					6:04			7:02			8:08	8:04		10:09	10:04	12:04	12:32	2:04	3:11
176.6 Hillsgrove Station																			
171.9 E. Greenwich Sta																			
168.0 Davsville Intl					6:10			7:08			8:15	8:10		10:16	10:10	12:10	12:39	2:10	3:18
165.8 Wickford Station																			
158.8 Kingston Intl					6:15			7:13			8:21	8:15		10:21	10:15	12:15	12:44	2:15	3:23
158.1 Kingston Station																			
142.9 High Street Intl																			
141.3 Westery Station					6:24			7:22				8:24		510:36	10:24	12:24	512:59	2:24	3:38
122.9 New London																			
105.1 Old Saybrook					56:40			L6:28			58:56			510:57			511:20		53:39
81.5 Branford																			
72.3 New Haven																			
Total time:		:56	:50	1:10	1:44	2:18	1:10	1:37	1:02	:50	2:17	1:42	:50	2:22	1:42	1:44	2:09	1:42	2:09

ConndOT SERVICE EXT-34 Train TT - Weekdays - Westbound

Departure Times	Train	869H	813	3679	873H	815	177N	5813	817	3683	877H	819	5815	821	5817	5819	169N	5821	899H
		p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
227.6 Back Bay		L3:34	L3:50		L4:34	L4:35	L5:00		L5:06		L5:34	L5:40		L6:11		L7:00		L7:34	
223.7 Forest Hills																			
217.3 Route 128																			
216.3 Westwood																			
213.9 Canton Jct																			
204.1 Mansfield																			
198.0 Holden																			
196.0 Thatcher																			
193.8 Hebronville																			
188.6 Lawn																			
185.6 Orms Intl		3:58	4:54		4:58	5:44	5:29		6:10		5:58	6:43		7:13		7:29		7:58	
185.1 Providence Station		54:00	A4:55		55:00	A5:45	55:31	L5:02	A6:11		56:00	A6:44	L5:50	A7:14					
184.2 Attwells Intl																			
181.2 Cranston Intl		4:04			5:04		5:36	5:07			6:04		5:55		6:21	6:54	7:36	7:24	8:04
176.6 Hillsgrove Station								55:13					56:01	56:27	57:00			57:30	
171.9 E. Greenwich Sta								55:19					56:07	56:33	57:06			57:36	
168.0 Davsville Intl		4:10			5:10		5:43	5:23			6:10		6:11	6:37	7:10	7:43	7:40	8:10	
165.8 Wickford Station								55:26					56:14		56:40	57:13		57:43	
158.8 Kingston Intl		4:15			5:15		5:48	5:33			6:15		6:21	6:47	7:20	7:48	7:51	8:15	
158.1 Kingston Station								55:50					56:23	56:49	57:22			57:53	
142.9 High Street Intl								55:35					6:37	7:03	7:36			8:07	
141.3 Westery Station		4:24			5:24		56:03	A5:52			6:24		56:40	A7:06	A7:39	58:03	A8:10	8:24	
122.9 New London		54:40					56:24						57:03			58:24		58:40	
105.1 Old Saybrook							56:41						57:22			58:41			
81.5 Branford																			
72.3 New Haven		A5:18		A5:10	A6:18		A7:09			A5:53	A7:16		A7:56			A9:09		A9:18	
Total time:		1:44	1:05	:45	1:44	1:10	2:09	:50	1:05	:38	1:42	1:04	2:06	1:03	:50	:50	2:09	:51	1:44

ConndOT SERVICE EXT-34 Train TT - Weekdays - Westbound

[illegible]

ComDOT SERVICE EXT-34 Train TT - Weekdays - Eastbound

Departure Times		Train	5802 a.m.	66N a.m.	5804 a.m.	5806 a.m.	3602 a.m.	802 a.m.	5808 a.m.	804 a.m.	806 a.m.	5810 a.m.	3604 a.m.	808 a.m.	810 a.m.	892H a.m.	850H a.m.	852H a.m.	170N a.m.	856H a.m.
72.3	New Haven			L2:54 ↑			L6:25 6:36						L8:00 8:13			L7:40 8:29	L9:13 10:01	L10:13 11:02	L10:16 11:04	L11:15 12:04
81.5	Branford						A7:10						A8:45							
105.1	Old Saybrook			S3:21															S10:43 11:00	
122.9	New London			S3:38															S11:00	
141.3	Westerly Station		L5:17 ↑	S3:55 ↑	L5:57 ↑	L6:15 ↑			L6:52 ↑			L7:20 ↑				8:29	10:01	11:02	S11:22 12:04	
142.9	High Street Int'l																			
156.1	Kingston Station		S5:33	S4:08	S6:13	S6:31			S7:08			S7:36							S11:35	
156.8	Kingston Int'l		S5:34	4:09	6:14	6:32			7:09			7:37				8:39	10:10	11:12	11:36	
165.8	Wickford Station		S5:43		S6:23	S6:41			S7:18			S7:46								
168.0	Davisville Int'l		S5:46		4:13	6:26	6:44		7:21			7:49				8:44	10:15	11:17	11:41	
171.9	E. Greenwich Sta		S5:51		S6:31	S6:49			S7:26			S7:54								
176.6	Hillsgrove Station		S5:57		S6:36	S6:55			S7:32			S8:00								
181.2	Cranton Int'l		6:02	4:20	6:41	7:00			7:37			8:05				8:50	10:21	11:23	11:48	
184.2	Alwells Int'l																			
185.1	Providence Station		A6:07	S5:59	A6:46	A7:05		L6:12	A7:42	L6:51	L7:10	A8:10		L7:47	L8:15	S8:55	S10:26	S11:28	S11:54	S12:30
185.6	Orms Int'l			6:00				6:13		6:52	7:11			7:48	8:16	8:56	10:27	11:29	11:55	12:31
188.6	Lawn																			
193.8	Hebronville																			
196.0	Thatcher																			
199.0	Holden																			
204.1	Mansfield																			
213.9	Canton Jct																			
216.3	Westwood																			
217.3	Route 128																			
223.7	Forest Hills																			
227.6	Back Bay			A6:29				A7:17		A7:53	A8:05			A8:49	A9:10	A9:18	A10:52	A11:54	A12:24	A12:56
	Total time:		:50	3:35	:49	:50	:45	1:05	:50	1:02	:55	:50	:45	1:02	:55	1:38	1:39	1:41	2:08	1:41

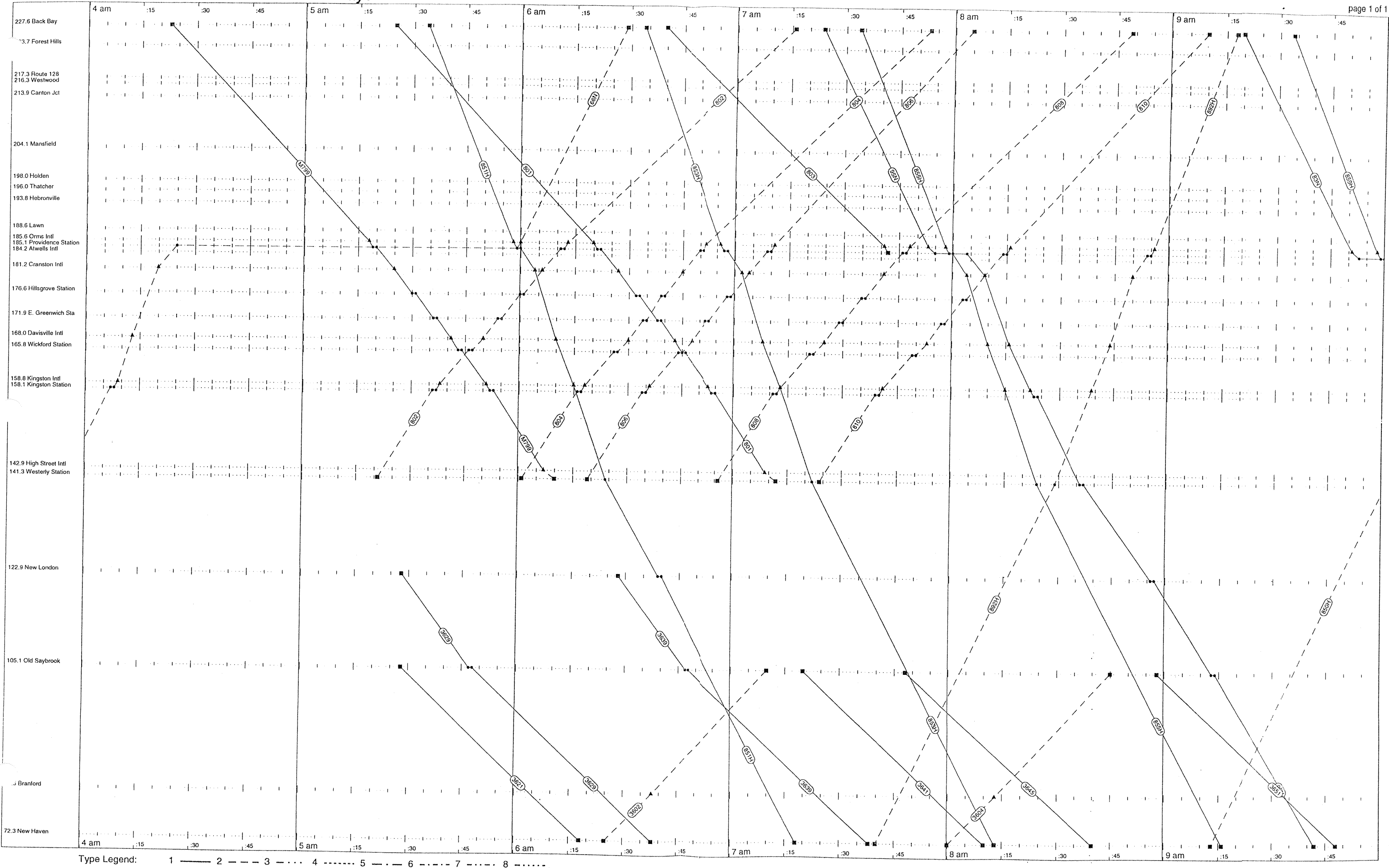
ConDOT SERVICE EXT-34 Train TT - Weekdays - Eastbound

Departure Times	Train		172N	860H	3630	84N	864H	3634	86N	3638	3640	822	868H	5700	3644	872H	3660	94N	874H	3662
			a.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
72.3 New Haven			L11:54	L1:15	L3:20	L2:19	L3:18	L4:15	L3:55	L5:05	L5:30		L5:16		L6:13	L6:11	L7:20	L6:13	L7:16	L8:15
81.5 Branford			↓		↓	↓		↓	↓	↓			↓				↓	↓		8:28
105.1 Old Saybrook			s12:21		A4:15	s2:46	↓	A5:05	s4:22	s5:55	A6:21		↓	s5:55	6:09	6:18	↓	s6:40	8:07	S8:52
122.9 New London			s12:38	↓		s3:03	s3:57		s4:38	A6:16					A7:25			s6:57	↓	s9:11
141.3 Westerly Station			s1:00	2:04		s3:25	4:11		s5:01				6:09	L6:10		7:01		s7:14	8:07	A9:33
142.9 High Street Intl			↓			↓			↓				6:18	6:12		↓		↓		
153.1 Kingston Station			s1:13	↓		s3:38	↓		s5:14				↓	s6:26		↓		s7:27	↓	
153.8 Kingston Intl			1:14	2:14		3:39	4:20		5:15				6:23	6:27		7:10		7:28	8:16	
165.8 Wickford Station			↓	↓		↓	↓	↓	↓				↓	s6:36		↓		↓	↓	
168.0 Davisville Intl			1:20	2:19		3:43	4:25		5:19				6:23	6:39		7:15		7:32	8:21	
171.9 E. Greenwich Sta			↓	↓		↓	↓	↓	↓				↓	s6:44		↓		↓	↓	
176.6 Hillsgrove Station			↓	↓		↓	↓	↓	↓				↓	s6:50		↓		↓	↓	
181.2 Cranston Intl			1:27	2:25		3:50	4:31		5:26				6:29	6:55		7:21		7:39	8:27	
184.2 Attwells Intl			↓	↓		↓	↓		↓				↓			↓		↓	↓	
185.1 Providence Station			s1:32	s2:30		s3:57	s4:36		s5:32					A7:00		s7:26		s7:46	s8:32	
185.6 Orms Intl			1:33	2:31		3:58	4:37		5:33				6:35			7:27		7:47	8:33	
188.6 Lawn																				
193.8 Hebronville																				
196.0 Thatcher																				
198.0 Holden																				
204.1 Mansfield																				
213.9 Canton Jct																				
216.3 Westwood																				
217.3 Route 128																				
223.7 Forest Hills			↓	↓		↓	↓		↓				↓			↓		↓	↓	
227.6 Back Bay			A2:02	A2:56		A4:27	A5:02		A6:03				A6:54	A7:00		A7:52		A8:16	A8:58	
Total time:			2:08	1:41	:55	2:08	1:44	:50	2:08	1:11	:51	1:01	1:44	:50	1:12	1:41	:50	2:03	1:42	1:18

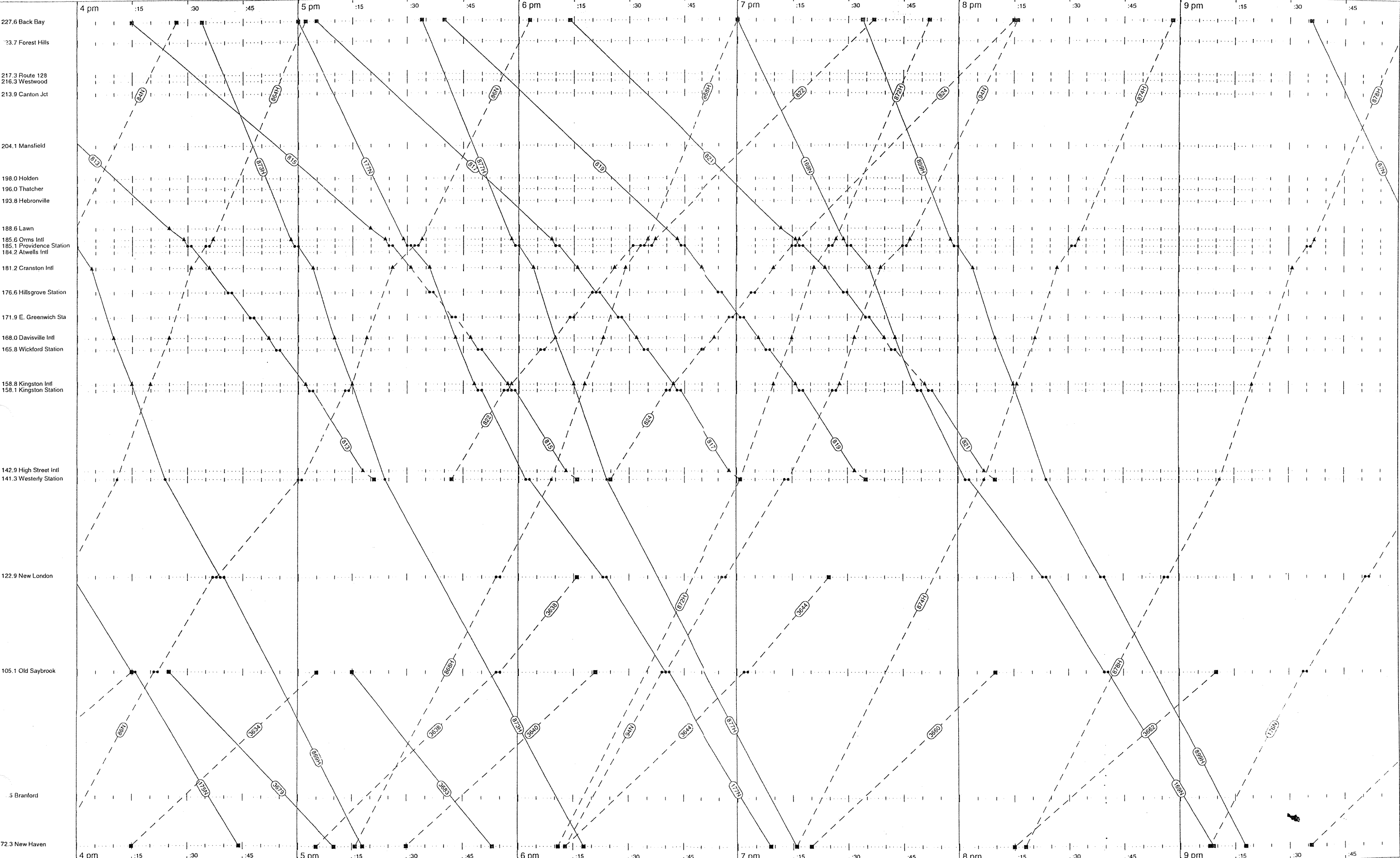
ConDOT SERVICE EXT-34 Train TT - Weekdays - Eastbound

Departure Times	Train		873H	3678	173N															
			p.m.	p.m.	p.m.															
72.3 New Haven			L8:18	L9:36	L9:08															
81.5 Branford			↓	↓	↓															
105.1 Old Saybrook			↓	A10:26	s9:35															
122.9 New London			s8:57		s9:52															
141.3 Westerly Station			9:11		s10:09															
142.9 High Street Intl			↓		↓															
153.1 Kingston Station			↓		s10:22															
153.8 Kingston Intl			9:20		10:23															
165.8 Wickford Station			↓		↓															
168.0 Davisville Intl			9:25		10:27															
171.9 E. Greenwich Sta			↓		↓															
176.6 Hillsgrove Station			↓		↓															
181.2 Cranston Intl			9:31		10:34															
184.2 Attwells Intl			↓		↓															
185.1 Providence Station			s9:36		s10:40															
185.6 Orms Intl			9:37		10:41															
188.6 Lawn																				
193.8 Hebronville																				
196.0 Thatcher																				
198.0 Holden																				
204.1 Mansfield																				
213.9 Canton Jct																				
216.3 Westwood																				
217.3 Route 128																				
223.7 Forest Hills			↓		↓															
227.6 Back Bay			A10:02		A11:11															
Total time:			1:44	:50	2:03															

MBTA SERVICE EXT-34 Train Sched - Weekdays



MBTA SERVICE EXT-34 Train Sched - Weekdays



Type Legend: 1 — 2 - - - 3 . . . 4 - - - - 5 - - - - - 6 - - - - - 7 - - - - - 8 - - - - -

MBTA SERVICE EXT-34 Train Sched - Weekdays - Westbound

Departure Times	Train	Page 1 of 2																					
		M/99 a.m.	801 a.m.	3621 a.m.	3629 a.m.	851H a.m.	3639 a.m.	853H a.m.	803 a.m.	3641 a.m.	95N a.m.	855H a.m.	3645 a.m.	3651 a.m.	83N a.m.	859H a.m.	861H a.m.	85N a.m.	855H p.m.				
227.6 Back Bay		L4:23	L5:25			L5:34	L6:34	L6:40	L7:24	L7:34		L9:20	L9:34	L11:34	L11:56	L1:34							
223.7 Forest Hills																							
217.3 Route 128																							
216.3 Westwood																							
213.9 Canton Jct																							
204.1 Mansfield																							
198.0 Holden																							
196.0 Thatcher																							
193.8 Hebronville																							
188.6 Lawn																							
185.6 Orms Int'l		5:18	6:20			5:58	6:56	7:41	7:53	7:58		9:51	9:58	11:58	12:25	1:58							
185.1 Providence Station		5:20	6:22			6:00	6:58	A7:42	8:04	8:00		10:04	10:00	12:00	12:27	2:00							
184.2 Atwells Int'l																							
181.2 Cranston Int'l		5:25	6:27			6:04	7:02		8:09	8:04		10:09	10:04	12:04	12:32	2:04							
176.6 Hillsgrove Station		5:31	6:33																				
171.9 E. Greenwich Sta		5:37	6:39																				
168.0 Davisville Int'l		5:41	6:43			6:10	7:08		8:16	8:10		10:16	10:10	12:10	12:39	2:10							
165.8 Wickford Station		5:44	6:46																				
158.8 Kingston Int'l		5:51	6:53			6:15	7:13		8:22	8:15		10:21	10:15	12:15	12:45	2:15							
158.1 Kingston Station		5:53	6:55						8:24			10:23			12:47								
142.9 High Street Int'l		6:07	7:09																				
141.3 Westervy Station		A6:10	A7:12			6:24	7:22		8:37	8:24		10:36	10:24	12:24	1:00	2:24							
122.9 New London									8:57			10:57		12:40	1:20								
105.1 Old Saybrook				L5:28	L5:28	5:48	6:48	6:28	8:14			11:14			1:37								
81.5 Branford																							
72.3 New Haven				A6:18	A6:38	A7:18	A7:38	A8:13	A8:10	A9:42	A9:16	A8:40	A9:48	A11:42	A11:16	A1:18	A2:05	A3:16					
Total time:		1:47	1:47	:50	1:10	1:44	1:10	1:39	1:02	:50	2:18	1:42	:52	:50	2:22	1:42	1:44	2:09	1:42				

MBTA SERVICE EXT-34 Train Sched - Weekdays - Westbound

Departure Times	Train	175N p.m.	869H p.m.	813 p.m.	815 p.m.	3679 p.m.	873H p.m.	177N p.m.	817 p.m.	3683 p.m.	877H p.m.	819 p.m.	821 p.m.	169N p.m.	899H p.m.	67N p.m.		
227.6 Back Bay		L2:35	L3:34	L3:47	L4:15		L4:34	L5:00	L5:05		L5:34	L5:40	L6:14	L7:00	L7:34	L9:36		
223.7 Forest Hills																		
217.3 Route 128																		
216.3 Westwood																		
213.9 Canton Jct																		
204.1 Mansfield																		
198.0 Holden																		
196.0 Thatcher																		
193.8 Hebronville																		
188.6 Lawn				4:47	5:20								7:12					
185.6 Orms Int'l		3:04	3:58	4:51	5:24		4:58	5:29	6:09		5:58	6:43	7:16	7:29	7:58	10:05		
185.1 Providence Station		3:06	3:40	4:53	5:26		5:00	5:31	6:11		6:00	6:45	7:18	7:31	8:00	10:07		
184.2 Atwells Int'l																		
181.2 Cranston Int'l		3:11	4:04	4:58	5:31		5:04	5:36	6:16		6:04	6:50	7:24	7:36	8:04	10:12		
176.6 Hillsgrove Station				5:04	5:37				6:22			6:56	7:30					
171.9 E. Greenwich Sta				5:10	5:43				6:28			7:02	7:36					
168.0 Davisville Int'l		3:18	4:10	5:14	5:47		5:10	5:43	6:32		6:10	7:06	7:40	7:43	8:10	10:19		
165.8 Wickford Station				5:17	5:50				6:35			7:09	7:43					
158.8 Kingston Int'l		3:23	4:15	5:24	5:57		5:15	5:48	6:42		6:15	7:16	7:51	7:48	8:15	10:24		
158.1 Kingston Station		3:25		5:25	5:59			5:50	6:44			7:18	7:53	7:50		10:26		
142.9 High Street Int'l					6:13				6:58			7:32	8:07					
141.3 Westervy Station		3:38	4:24		A6:16		5:24	6:03	A7:01		6:24	A7:35	A8:10	8:03	8:24	10:39		
122.9 New London		3:59	4:40					6:24						8:24		10:58		
105.1 Old Saybrook		3:41						6:41						8:41		11:15		
81.5 Branford																		
72.3 New Haven		A4:44	A5:18			A5:10	A6:18	A7:09		A5:53	A7:16			A9:09	A9:18	A11:43		
Total time:		2:09	1:44	1:38	2:01	:45	1:44	2:09	1:56	:38	1:42	1:55	1:56	2:09	1:44	2:07		

MBTA SERVICE EXT-34 Train Sched - Weekdays - Eastbound

Departure Times	Train	66N	3602	802	804	806	3604	808	810	892H	850H	862H	170N	856H	172N	860H	3630	84N	864H
		a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	a.m.	p.m.	p.m.	p.m.	p.m.
72.3 New Haven		L2:54	L6:25				L8:00			L7:40	L9:13	L10:13	L10:16	L11:15	L11:54	L1:15	L3:20	L2:19	L3:18
81.5 Branford		↓	6:38				8:13						↓		↓		↓	↓	↓
105.1 Old Saybrook		S3:21	A7:10				A8:45						S10:43		S12:21		A4:15	S2:46	
122.9 New London		S3:38								↓	↓	↓	S11:00	↓	S12:38	↓	S3:03	↓	S3:57
141.3 Westerly Station		S3:55		L5:21		L5:01	L6:19		L6:56	8:29	10:01	11:02	S11:22	12:04	S1:00	2:04		S3:25	4:11
142.9 High Street Int'l		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓		↓	↓
153.1 Kingston Station		S4:08		S5:37		S6:17	S6:35		S7:12	↓	↓	↓	S11:35	↓	S1:13	↓	S3:38	↓	↓
158.8 Kingston Int'l		4:09		5:38		6:18	6:36		7:13	8:39	10:10	11:12	11:36	12:14	1:14	2:14	3:39	4:20	↓
165.8 Wickford Station		↓	↓	S5:47		S6:27	S6:45		S7:22	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
168.0 Davisville Int'l		4:13		5:50		6:30	6:48		7:25	8:44	10:15	11:17	11:42	12:19	1:20	2:19	3:43	4:25	↓
171.9 E. Greenwich Sta		↓	↓	S5:55		S6:35	S6:53		S7:30	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
176.6 Hillsgrove Station		↓	↓	S6:01		S6:40	S6:59		S7:36	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
181.2 Cranston Int'l		4:20		6:06		6:45	7:04		7:41	8:50	10:21	11:23	11:49	12:25	1:27	2:25	3:50	4:31	↓
184.2 Attwells Int'l		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
185.1 Providence Station		S5:39		S6:12		S6:51	S7:10		S7:47	S8:55	S10:26	S11:28	S11:54	S12:30	S1:32	S2:30	S3:57	S4:36	↓
185.6 Orms Int'l		6:00		6:13		6:52	7:11		7:48	8:56	10:27	11:29	11:55	12:31	1:33	2:31	3:58	4:37	↓
188.6 Lawn		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
193.8 Hebronville		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
196.0 Thatcher		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
198.0 Holden		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
204.1 Mansfield		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
213.9 Canton Jct		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
216.3 Westwood		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
217.3 Route 128		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
223.7 Forest Hills		↓	↓	↓		↓	↓		↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
227.6 Back Bay		A6:29		A7:16		A7:53	A8:05		A8:49	A9:18	A10:52	A11:54	A12:24	A12:56	A2:02	A2:56		A4:27	A5:02
Total time:		3:35	:45	1:55	1:52	1:46	:45	1:53	1:46	1:38	1:39	1:41	2:08	1:41	2:08	1:41	:55	2:08	1:44

MBTA SERVICE EXT-34 Train Sched - Weekdays - Eastbound

Departure Times	Train	3634	86N	3638	3640	868H	822	3644	872H	3660	824	94N	874H	3662	878H	3678	176N		
		p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.		
72.3 New Haven		L4:15	L3:55	L5:05	L5:30	L5:16		L6:13	L6:11	L7:20		L6:13	L7:16	L8:15	L8:18	L9:36	L9:08		
81.5 Branford		↓	↓	↓	↓	↓		↓	↓	↓		↓	↓	↓	↓	↓	↓		
105.1 Old Saybrook		A5:05	S4:22	S5:55	A6:21	↓		S7:03	↓	A8:10		S6:40	↓	A9:10	↓	A10:26	S9:35		
122.9 New London			S4:38	A6:16		S5:55		A7:25	↓			S6:57	↓		S8:57		S9:52		
141.3 Westerly Station			S5:01			6:09			7:01		L6:25	S7:14	8:07		9:11		S10:09		
142.9 High Street Int'l			↓			↓			↓		↓	↓	↓		↓		↓		
153.1 Kingston Station			S5:14			L5:47			↓			S7:27	↓		↓		S10:22		
158.8 Kingston Int'l			5:15			6:18	5:48		7:10		6:42	7:28	8:16		9:20		10:23		
165.8 Wickford Station			↓			↓	S5:57		↓		S6:51	↓	↓		↓		↓		
168.0 Davisville Int'l			5:19			6:23	6:00		7:15		6:54	7:32	8:21		9:25		10:27		
171.9 E. Greenwich Sta			↓			↓	S6:05		↓		S6:59	↓	↓		↓		↓		
176.6 Hillsgrove Station			5:25			6:29	S6:11		7:21		S7:05	↓	8:27		9:31		10:34		
181.2 Cranston Int'l			↓			↓	↓		↓		7:10	7:39	↓		↓		↓		
184.2 Attwells Int'l			↓			↓	↓		↓		↓	↓	↓		↓		↓		
185.1 Providence Station			S5:33			S6:34	S6:22		S7:26		S7:16	S7:46	S8:32		S9:36		S10:41		
185.6 Orms Int'l			5:34			6:35	6:23		7:27		7:17	7:47	8:33		9:37		10:42		
188.6 Lawn			↓			↓	↓		↓		↓	↓	↓		↓		↓		
193.8 Hebronville			↓			↓	↓		↓		↓	↓	↓		↓		↓		
196.0 Thatcher			↓			↓	↓		↓		↓	↓	↓		↓		↓		
198.0 Holden			↓			↓	↓		↓		↓	↓	↓		↓		↓		
204.1 Mansfield			↓			↓	↓		↓		↓	↓	↓		↓		↓		
213.9 Canton Jct			↓			↓	↓		↓		↓	↓	↓		↓		↓		
216.3 Westwood			↓			↓	↓		↓		↓	↓	↓		↓		↓		
217.3 Route 128			↓			↓	↓		↓		↓	↓	↓		↓		↓		
223.7 Forest Hills			↓			↓	↓		↓		↓	↓	↓		↓		↓		
227.6 Back Bay		A6:03				A7:00	A7:23		A7:52		A8:15	A8:16	A8:58		A10:02		A11:11		
Total time:		:50	2:08	1:11	:51	1:44	1:36	1:12	1:41	:50	1:50	2:03	1:42	:55	1:44	:50	2:03		

OPERATING AND MAINTENANCE COSTS

**YEAR 2000
ESTIMATED COMMUTER RAIL OPERATING COSTS**

YEARLY EXPENDITURES	Alternatives (See Footnote)			
	1A	1B	2	3
1. Trackage Use Fee	\$ 2,020,946	\$ 1,396,049	\$ 1,407,405	\$ 2,167,199
2. Transportation Costs (Train & Engine)	\$ 2,063,164	\$ 2,063,164	\$ 1,965,542	\$ 2,642,227
3. Service Support Staff	\$ 1,101,745	\$ 1,101,745	\$ 616,088	\$ 251,000
4. Mechanical Costs (Staff & Purchased Service)	\$ 295,941	\$ 295,941	\$ 221,956	\$ 221,956
5. Equipment Maintenance Costs	\$ 836,128	\$ 836,128	\$ 969,900	\$ 1,028,200
6. Shared Equipment Costs				\$ 667,800
7. Fuel Costs	\$ 511,197	\$ 353,130	\$ 464,113	\$ 548,192
8. Station Maintenance	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
9. General and Administrative	INCLUDED IN COSTS	INCLUDED IN COSTS	INCLUDED IN COSTS	INCLUDED IN COSTS
10. General and Administrative Overhead	INCLUDED IN COSTS	INCLUDED IN COSTS	INCLUDED IN COSTS	INCLUDED IN COSTS
11. Operating Management Fee	INCLUDED IN COSTS	INCLUDED IN COSTS	INCLUDED IN COSTS	INCLUDED IN COSTS
12. Corporate Services Fee	INCLUDED IN COSTS	INCLUDED IN COSTS	INCLUDED IN COSTS	INCLUDED IN COSTS
TOTAL OPERATING COSTS	\$ 6,859,121	\$ 6,076,156	\$ 5,675,004	\$ 7,556,574
ESTIMATED TRAIN MILES	237,758	164,241	215,860	254,965
ESTIMATED REVENUE TRAIN MILES	156,941	156,941	206,474	168,152
ESTIMATED COST/REVENUE TRAIN MILE	-\$43.70	\$38.72	-\$27.49	-\$44.94

Footnote:

Option 1A: Stand Alone Service In Rhode Island (Pawtucket Layover)
Option 1B: Stand Alone Service In Rhode Island (Westerly Layover)
Option 2: CONNDOT Service Extension To Providence
Option 3: MBTA Service Extension To Westerly

Estimated Cost/Train Mile is negative because proposed revenue has not been included.

YE 2000
ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

ALTERNATIVE 1A: STAND ALONE SERVICE
OPERATING COSTS BY CATEGORY
SCCRS: INTRASTATE SERVICE

EXPENDITURES	MONTHLY	YEARLY
1. Trackage Use Fee	\$168,412	\$2,020,946
2. Transportation Costs (Train & Engine)	\$171,930	\$2,063,164
3. Service Support Staff	\$91,812	\$1,101,745
4. Mechanical Costs (Car Cleaners)	\$24,662	\$295,941
5. Equipment Maintenance Costs	\$69,677	\$836,128
6. Fuel Costs	\$42,600	\$511,197
7. Station Maintenance	\$2,500	\$30,000
8. General and Administrative		INCLUDED IN COSTS
9. General and Administrative Overhead		INCLUDED IN COSTS
10. Operating Management Fee		INCLUDED IN COSTS
11. Corporate Services Fee		INCLUDED IN COSTS

TOTAL EXPENDITURES	\$6,859,121
PASSENGER REVENUES	0
NON-TRANSPORTATION REVENUE	\$0
TOTAL REVENUES	\$0
TOTAL ESTIMATED COMMUTER COSTS	-\$6,859,121
ESTIMATED TRAIN MILES	237,758
ESTIMATED REVENUE TRAIN MILES	156,941
ESTIMATED COST/REVENUE TRAIN MILE	-\$43.70

YE 000
ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

RAIL OPERATING CHARACTERISTICS

PROPOSED SERVICE / TRAIN MILES PER DAY / FIVE DAYS A WEEK SERVICE/PAWTUCKET LAYOVER

TRAIN NO.	COMMENTS	ORIGIN	DESTINATION	PERIOD	DEADHEAD	TRAIN MILES REVENUE	TOTAL
5802 DH	Deadhead for 5802	Pawtucket	Westerly		47	0	47
5802	Turn to 5801	Westerly	Providence	AM Rush	0	43	43
5804 DH	Deadhead for 5804	Pawtucket	Westerly		47	0	47
5804	To Pawtucket	Westerly	Providence	AM Rush	4	43	47
5806 DH	Deadhead for 5806	Pawtucket	Westerly		47	0	47
5806	To Pawtucket	Westerly	Providence	AM Rush	4	43	47
5808	Turn of 5801	Westerly	Providence	AM Rush	4	43	47
5810	Turn of 5803	Westerly	Providence	AM Rush	4	43	47
5822	Turn As 5819	Westerly	Providence	PM Rush	4	43	47
5824	Turn of 5815	Westerly	Providence	PM Rush	0	43	43
5801	Turn of 5802	Providence	Westerly	AM Rush	4	43	47
5803	Turn of 5804	Providence	Westerly	AM Rush	0	43	43
5813	Turns as 5822	Providence	Westerly	PM Rush	4	43	47
5817	From Pawtucket	Providence	Westerly	PM Rush	4	43	47
5815	Turn As 5824	Providence	Westerly	PM Rush	0	43	43
5817DH	Deadhead for 5817	Westerly	Pawtucket		47	0	47
5819	Turn of 5822	Providence	Westerly	PM Rush	0	43	43
5819DH	Deadhead for 5819	Westerly	Providence		47	0	47
5821	Turn of 5824	Providence	Westerly	PM Rush	0	43	43
5821DH	Deadhead for 5821	Westerly	Providence		47	0	47

TOTALS (DAILY TRAIN MILES)

310 602 912

PROPOSED SERVICE / TRAIN MILES AND FUEL CONSUMPTION

AVERAGE FUEL CONSUMPTION GALLONS/MILE	3	GALLONS/DAY	2736
SERVICE DAYS/WEEK	5	TRAIN MILES /WEEK	4560
WEEKS /YEAR	52.14	TRAIN MILES /YEAR	237,758
GALLONS/MILE	3.0	REVENUE TRAIN MILES/YEAR	156,941

Y1 000
ESTIMATED COMMUTEK RAIL OPERATING COSTS
PAWTUCKET LAYOVER

TRANSPORTATION COSTS (TRAIN AND ENGINE)
FY 1998 \$'S (MBTA Agreement)

LABOR	DESCRIPTION	POS. QTY.	HOURLY RATE	ANNUAL S-TIME WAGES 2080	ANNUAL OVERTIME WAGES 10%	FRINGE BENEFITS 42.22%	TRANS. SYS. O/H 0%	TRANS. DIV. O/H 0%	VACATION & HOLIDAY 17%	F.E.L.A. 8.71%	LABOR SUBTOTAL	CORP SVCS 2%	MNGMNT FEE 6%	TOTAL COSTS	EQUIV OH S/LABOR
6.Crews															
	Engineer	6	\$ 24.16	\$ 301,517	\$ 45,228	\$ 133,293	\$ 0	\$ 0	\$ 51,258	\$ 30,201	\$ 561,497	\$ 11,230	\$ 33,690	\$ 606,416	201.12%
	Conductor	6	\$ 20.23	\$ 252,470	\$ 37,871	\$ 111,811	\$ 0	\$ 0	\$ 42,920	\$ 25,289	\$ 470,160	\$ 9,403	\$ 28,210	\$ 507,773	201.12%
	Assistant Conductor	6	\$ 17.32	\$ 216,154	\$ 32,423	\$ 85,558	\$ 0	\$ 0	\$ 36,748	\$ 21,651	\$ 402,530	\$ 8,051	\$ 24,152	\$ 434,732	201.12%
	Subtotal	18		\$ 770,141	\$ 115,521	\$ 340,460	\$ 0	\$ 0	\$ 130,924	\$ 77,141	\$ 1,434,187	\$ 28,684	\$ 86,051	\$ 1,548,922	
Additional Crew Time (Spares)															
	Engineer	0.66	\$ 24.16	\$ 33,167	\$ 4,975	\$ 14,662	\$ 0	\$ 0	\$ 5,638	\$ 3,322	\$ 61,765	\$ 1,235	\$ 3,708	\$ 66,708	201.12%
	Conductor	0.66	\$ 20.23	\$ 27,772	\$ 4,166	\$ 12,277	\$ 0	\$ 0	\$ 4,721	\$ 2,782	\$ 51,718	\$ 1,034	\$ 3,103	\$ 55,855	201.12%
	Assistant Conductor	0.66	\$ 17.32	\$ 23,777	\$ 3,567	\$ 10,511	\$ 0	\$ 0	\$ 4,042	\$ 2,382	\$ 44,278	\$ 886	\$ 2,657	\$ 47,821	201.12%
	Subtotal	1.98		\$ 84,715	\$ 12,707	\$ 37,451	\$ 0	\$ 0	\$ 14,402	\$ 8,486	\$ 157,761	\$ 3,155	\$ 9,466	\$ 170,381	
	Contingency	20%		\$ 170,971	\$ 25,046	\$ 75,582	\$ 0	\$ 0	\$ 29,085	\$ 17,125	\$ 318,390	\$ 6,368	\$ 19,103	\$ 343,861	
	LABOR SUBTOTAL			\$ 1,025,828	\$ 153,874	\$ 453,493	\$ 0	\$ 0	\$ 174,391	\$ 102,752	\$ 1,910,337	\$ 38,207	\$ 114,620	\$ 2,063,164	201.12%

SUBTOTAL \$0.00

SUBTOTAL \$0.00

TRANSPORTATION MATERIAL
Description
MATERIAL SUBTOTAL

PURCHASED SERVICES
Description
PURCHASED SERVICES SUBTOTAL

OTHER	Description	Unit Cost	Units	SUBTOTAL
	TRACK USAGE FEES	\$ 8.50 (Train mile)	237,758	\$2,020,946

YE' 7000
ESTIMATED COMMUT. AIL OPERATING COSTS
PAWTUCKET LAYOVER

SERVICE SUPPORT STAFF
FY 1998 \$'S (MBTA Agreement)

LABOR DESCRIPTION	POS. QTY.	HOURLY RATE	ANNUAL S-TIME WAGES 2080	ANNUAL OVERTIME WAGES 10%	FRINGE BENEFITS 42.22% 13.25%	TRANS. SYS.O/H 0%	TRANS. DIV.O/H 0%	VACATION & HOLIDAY 17%	E.E.L.A. 8.71%	LABOR SUBTOTAL	CORP SVCS 2%	MNGMNT FEE 6%	TOTAL COSTS	EQUIV OH STLABOR
Supt. Transp.	1	\$ 35.00	\$ 72,800	\$ 10,920	\$ 32,183	\$ 0	\$ 0	\$ 12,376	\$ 7,292	\$ 135,571	\$ 2,711	\$ 8,134	\$ 146,417	201.12%
Trainmaster	2	\$ 25.00	\$ 104,000	\$ 15,600	\$ 45,976	\$ 0	\$ 0	\$ 17,680	\$ 10,417	\$ 193,673	\$ 3,873	\$ 11,620	\$ 209,167	201.12%
Mech. Supt.	1	\$ 25.00	\$ 52,000	\$ 7,800	\$ 22,988	\$ 0	\$ 0	\$ 8,840	\$ 5,209	\$ 96,836	\$ 1,937	\$ 5,810	\$ 104,583	201.12%
Safety Supt.	1	\$ 25.00	\$ 52,000	\$ 7,800	\$ 22,988	\$ 0	\$ 0	\$ 8,840	\$ 5,209	\$ 96,836	\$ 1,937	\$ 5,810	\$ 104,583	201.12%
Subtotal	5		\$ 280,800	\$ 42,120	\$ 124,135	\$ 0	\$ 0	\$ 47,736	\$ 28,126	\$ 522,917	\$ 10,458	\$ 31,375	\$ 564,750	
Comptroller	1	\$ 25.00	\$ 52,000	\$ 7,800	\$ 22,988	\$ 0	\$ 0	\$ 8,840	\$ 5,209	\$ 96,836	\$ 1,937	\$ 5,810	\$ 104,583	201.12%
Revenue Supt.	1	\$ 22.00	\$ 45,760	\$ 6,864	\$ 20,229	\$ 0	\$ 0	\$ 7,779	\$ 4,584	\$ 85,216	\$ 1,704	\$ 5,113	\$ 92,033	201.12%
Admin. Assist.	1	\$ 10.00	\$ 20,800	\$ 3,120	\$ 9,195	\$ 0	\$ 0	\$ 3,536	\$ 2,083	\$ 38,735	\$ 775	\$ 2,324	\$ 41,833	201.12%
Subtotal	3		\$ 118,560	\$ 17,784	\$ 52,412	\$ 0	\$ 0	\$ 20,155	\$ 11,876	\$ 220,787	\$ 4,416	\$ 13,247	\$ 238,450	
Contingency	20%		\$79,872	\$11,981	\$35,309	\$0	\$0	\$13,578	\$8,000	\$148,741	\$2,975	\$8,924	\$160,640	
LABOR SUBTOTAL			\$479,232	\$71,885	\$211,856	\$0	\$0	\$81,469	\$48,002	\$892,445	\$17,849	\$53,547	\$963,841	201.12%

PURCHASED SERVICES

	COST/MO.	# MO.
Accounting & Payroll Svcs.	\$2,500/mo.	12 mos.
Office Rental (sq. ft.)	\$12,500/3 mos.	12 mos.
Communications	\$400/mo.	12 mos.
Furniture/Equipment	\$1,000/mo.	12 mos.
Office Supplies	\$250/mo.	12 mos.
Utilities (electric & heat)	\$250/mo.	12 mos.
Postage, mail, etc.	\$250/mo.	12 mos.
Business development	\$500/mo.	12 mos.
Travel expenses	\$750/mo.	12 mos.
Automobiles (2)	\$1,200/mo.	12 mos.
SUBTOTAL		

\$135,200 1.02
Corporate Services
Additive

\$137,904

TOTAL STAFF AND PURCHASED SERVICE COSTS

\$1,101,745

Y1 000
ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

MECHANICAL COSTS (STAFF AND PURCHASED SERVICES)
FY 1998 \$'S(MBTA Agreement)

LABOR	DESCRIPTION	POS. QTY.	HOURLY RATE	ANNUAL S-TIME WAGES 2080	ANNUAL OVERTIME WAGES 15%	FRINGE BENEFITS 48.51%	TRANS. SYS. O/H 0%	TRANS. DIV. O/H 0%	VACATION & HOLIDAY 17%	F.E.L.A. 8.71%	LABOR SUBTOTAL	CORP SVCS 2%	MNGMNT FEE 6%	TOTAL COSTS	EQUIV OH \$/LABOR
Crew #1-First shift															
	Machinist	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
	Electrician	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
	Car Repairman	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
	Subtotal	0		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
Crew #2-Second shift															
	Machinist	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
	Electrician	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
	Car Repairman	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
	Car Cleaner	4	\$ 13.44	\$ 111,821	\$ 25,160	\$ 60,429	\$ -	\$ -	\$ 19,010	\$ 11,931	\$ 228,350	\$ 4,567	\$ 13,701	\$ 246,617	220.55%
	Subtotal	4		\$ 111,821	\$ 25,160	\$ 60,429	\$ -	\$ -	\$ 19,010	\$ 11,931	\$ 228,350	\$ 4,567	\$ 13,701	\$ 246,617	220.55%
	Contingency	20%		\$22,364	\$5,032	\$12,088	\$0	\$0	\$3,802	\$2,386	\$45,670	\$913	\$2,740	\$49,323	
	LABOR SUBTOTAL			\$134,185	\$30,192	\$72,514	\$0	\$0	\$22,811	\$14,317	\$274,019	\$5,480	\$16,441	\$295,941	220.55%

MATERIAL

Description	SUBTOTAL
MATERIAL SUBTOTAL	\$0.00

PURCHASED SERVICES

Description	SUBTOTAL
PURCHASED SERVICES SUBTOTAL	\$0.00

OTHER

Description	SUBTOTAL
OTHER SUBTOTAL	\$0.00

TOTAL - MECHANICAL

\$295,941

ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER
ANNUAL EQUIPMENT MAINTENANCE COSTS

LINE - PROVIDENCE TO WESTERLY

LABOR, EQUIPMENT & MATERIAL						
Description	Qty.	UNIT	EXTENDED	SUBTOTAL	MANAGEMENT FEE	MAT'L TOTALS
Locomotive Maintenance						
Preventive Maintenance - Diesels	4	\$51,000	\$204,000		6%	
Running Repairs - Diesels	4	\$17,000	\$68,000			
Locomotive Subtotal		\$68,000	\$272,000	\$272,000		\$16,320
Cab Car/ Coach Maintenance						
Cab Cars						
Preventive Maintenance - Cab Cars	4	\$51,000	\$204,000			
Running Repairs - Cab Cars	4	\$17,000	\$68,000			
Cab Car Subtotal		\$68,000	\$272,000	\$272,000	\$16,320	\$288,320
Coaches						
Preventive Maintenance - Coaches	9	\$20,400	\$183,600			
Running Repairs - Coaches	9	\$6,800	\$61,200			
Coach Subtotal		\$27,200	\$244,800	\$244,800	\$14,688	\$259,488
SUBTOTAL				\$788,800		
HANDLING SUBTOTAL					\$47,328	\$836,128
TOTAL COSTS						\$836,128

YE 2000

ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

LINE - PROVIDENCE TO WESTERLY
DIESEL FUEL DETAIL COSTS

FUEL COSTS

LABOR		LABOR		COST		TOTAL	
Description		SUBTOTAL	\$0	SUBTOTAL	\$0	COSTS	\$0
Labor Subtotal							
MATERIAL		ANNUAL					
Description	UNIT COST	GALLONS					
Diesel Fuel Materials	\$0.65	713,275		\$463,629			
Material Handling	10.26%			\$47,568			
TOTAL COST - DIESEL FUEL				\$511,197		\$511.197	

STATION MAINTENANCE COSTS (PURCHASED SERVICE)

STATION	YEARLY UNIT COST (LABOR, EQUIP, MATERIALS)
Westerly	\$0.00
Kingston	\$0.00
Wickford JCT.	\$10,000.00
Warwick	\$20,000.00
Providence	\$0.00
Total Station Costs	\$30,000.00

YE 2000
ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

ALTERNATIVE 1B: STAND ALONE SERVICE
OPERATING COSTS BY CATEGORY
SCCRS: INTRASTATE SERVICE

<u>EXPENDITURES</u>	<u>MONTHLY</u>	<u>YEARLY</u>
1. Trackage Use Fee	\$116,337	\$1,396,049
2. Transportation Costs (Train & Engine)	\$171,930	\$2,063,164
3. Service Support Staff	\$91,812	\$1,101,745
4. Mechanical Costs (Car Cleaners)	\$24,662	\$295,941
5. Equipment Maintenance Costs	\$69,677	\$836,128
6. Fuel Costs	\$29,427	\$353,130
7. Station Maintenance	\$2,500	\$30,000
8. General and Administrative		INCLUDED IN COSTS
9. General and Administrative Overhead		INCLUDED IN COSTS
10. Operating Management Fee		INCLUDED IN COSTS
11. Corporate Services Fee		INCLUDED IN COSTS

TOTAL EXPENDITURES	\$6,076,156
PASSENGER REVENUES	0
NON-TRANSPORTATION REVENUE	\$0
TOTAL REVENUES	\$0
TOTAL ESTIMATED COMMUTER COSTS	-\$6,076,156
ESTIMATED TRAIN MILES	164,241
ESTIMATED REVENUE TRAIN MILES	156,941
ESTIMATED COST/TRAIN MILE	-\$38.72

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ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

RAIL OPERATING CHARACTERISTICS

PROPOSED SERVICE / TRAIN MILES PER DAY / FIVE DAYS A WEEK SERVICE/WESTERLY LAYOVER

TRAIN NO.	COMMENTS	ORIGIN	DESTINATION	PERIOD	DEADHEAD	REVENUE	TRAIN MILES TOTAL
5802	Turns as 5801	Westerly	Providence	AM Rush	0	43	43
5804		Westerly	Providence	AM Rush	4	43	47
5806		Westerly	Providence	AM Rush	4	43	47
5808	Turn of 5801	Westerly	Providence	AM Rush	4	43	47
5810	Turn of 5803	Westerly	Providence	AM Rush	4	43	47
5822	Turn of 5813	Westerly	Providence	PM Rush	0	43	43
5824	Turn of 5815	Westerly	Providence	PM Rush	0	43	43
5801	Turn of 5802	Providence	Westerly	AM Rush	0	43	43
5803	Turn of 5804	Providence	Westerly	AM Rush	0	43	43
5813	Turns as 5822	Providence	Westerly	PM Rush	4	43	47
5817		Providence	Westerly	PM Rush	4	43	47
5819	Turn of 5822	Providence	Westerly	PM Rush	0	43	43
5821	Turn of 5824	Providence	Westerly	PM Rush	0	43	43
5815	Turn as 5824	Providence	Westerly	PM Rush	4	43	47

TOTALS (DAILY TRAIN MILES)

28 602 630

PROPOSED SERVICE / TRAIN MILES AND FUEL CONSUMPTION

TRAIN MILES / DAY 630	AVERAGE FUEL CONSUMPTION GALLONS / MILE 3	GALLONS / DAY 1890
DAYS / WEEK 5	WEEKS / YEAR 52.14	TRAIN MILES / WEEK 3150
GALLONS / MILE 3.0		TRAIN MILES / YEAR 164,241
		REVENUE TRAIN MILES / YEAR 156,941

ESTIMATED COMMUT. RAIL OPERATING COSTS
WESTERLY LAYOVER

TRANSPORTATION COSTS (TRAIN AND ENGINE)

FY 1998 \$'S (MBTA Agreement)

LABOR	DESCRIPTION	POS. QTY.	HOURLY RATE	ANNUAL S-TIME WAGES 2080	ANNUAL OVERTIME WAGES 10%	FRINGE BENEFITS 42.22% 13.25%	TRANS. SYS. O/H 0%	TRANS. DIV. O/H 0%	VACATION & HOLIDAY 17%	E.E.L.A. 8.71%	LABOR SUBTOTAL	CORP SVCS 2%	MNGMNT FEE 6%	TOTAL COSTS	EQUIV OH ST LABOR
6 Crews															
	Engineer	6	\$ 24.16	\$ 301,517	\$ 45,228	\$ 133,293	\$ -	\$ -	\$ 51,258	\$ 30,201	\$ 561,497	\$ 11,230	\$ 33,690	\$ 606,416	201.12%
	Conductor	6	\$ 20.23	\$ 252,470	\$ 37,871	\$ 111,611	\$ -	\$ -	\$ 42,920	\$ 25,289	\$ 470,160	\$ 9,403	\$ 28,210	\$ 507,773	201.12%
	Assistant Conductor	9	\$ 17.32	\$ 216,154	\$ 32,423	\$ 95,556	\$ -	\$ -	\$ 36,746	\$ 21,651	\$ 402,530	\$ 8,051	\$ 24,152	\$ 434,732	201.12%
	Subtotal	18		\$ 770,141	\$ 115,521	\$ 340,460	\$ -	\$ -	\$ 130,924	\$ 77,141	\$ 1,434,187	\$ 28,684	\$ 86,051	\$ 1,548,922	
Additional Crew Time (Spares)															
	Engineer	0.66	\$ 24.16	\$ 33,167	\$ 4,975	\$ 14,662	\$ -	\$ -	\$ 5,638	\$ 3,322	\$ 61,765	\$ 1,235	\$ 3,706	\$ 66,706	201.12%
	Conductor	0.66	\$ 20.23	\$ 27,772	\$ 4,166	\$ 12,277	\$ -	\$ -	\$ 4,721	\$ 2,782	\$ 51,718	\$ 1,034	\$ 3,103	\$ 55,855	201.12%
	Assistant Conductor	0.66	\$ 17.32	\$ 23,777	\$ 3,567	\$ 10,511	\$ -	\$ -	\$ 4,042	\$ 2,382	\$ 44,278	\$ 886	\$ 2,657	\$ 47,821	201.12%
	Subtotal	1.98		\$ 84,715	\$ 12,707	\$ 37,451	\$ -	\$ -	\$ 14,402	\$ 8,486	\$ 157,761	\$ 3,155	\$ 9,466	\$ 170,381	
	Contingency	20%		\$ 170,971	\$ 25,646	\$ 75,582	\$ 0	\$ 0	\$ 29,065	\$ 17,125	\$ 318,390	\$ 6,368	\$ 19,103	\$ 343,861	
	LABOR SUBTOTAL			\$ 1,025,828	\$ 153,874	\$ 453,493	\$ 0	\$ 0	\$ 174,391	\$ 102,752	\$ 1,910,337	\$ 39,207	\$ 114,620	\$ 2,063,164	201.12%
															SUBTOTAL \$0.00
TRANSPORTATION MATERIAL															
Description MATERIAL SUBTOTAL															
PURCHASED SERVICES															
Description PURCHASED SERVICES SUBTOTAL															
OTHER															
Description TRACK USAGE FEES															
			Unit Cost \$	8.50 (Train mile)	Units 164,241	SUBTOTAL \$1,395,049									
															SUBTOTAL \$0.00
															SUBTOTAL \$1,395,049

1000

20%

PURCHASED SERVICE
Accounting & Payroll Svcs.

SUBTOTAL

102

\$137,904

\$1,101,745

Y: 000
ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

MECHANICAL COSTS (STAFF AND PURCHASED SERVICES)
FY 1998 \$(MBTA Agreement)

LABOR	POS.	QTY.	HOURLY RATE	ANNUAL S-TIME WAGES 2080	ANNUAL OVERTIME WAGES 15%	FRINGE BENEFITS 48.51%	TRANS. SYS. O/H 0%	TRANS. DIV. O/H 0%	VACATION & HOLIDAY 17%	E.E.L.A. 8.71%	LABOR SUBTOTAL	CORP SVCS 2%	MNGMNT FEE 6%	TOTAL COSTS	EQUIV OH ST LABOR
Crew #1-First shift															
Machinist	0		\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Electrician	0		\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Car Repairman	0		\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Subtotal	0			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Crew #2-Second shift															
Machinist	0		\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Electrician	0		\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Car Repairman	0		\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Car Cleaner	4		\$ 13.44	\$ 111,821	\$ 25,160	\$ 60,429	\$ -	\$ -	\$ 19,010	\$ 11,931	\$ 228,350	\$ 4,567	\$ 13,701	\$ 246,617	220.55%
Subtotal	4			\$ 111,821	\$ 25,160	\$ 60,429	\$ -	\$ -	\$ 19,010	\$ 11,931	\$ 228,350	\$ 4,567	\$ 13,701	\$ 246,617	
Contingency	20%			\$22,364	\$5,032	\$12,086	\$0	\$0	\$3,802	\$2,386	\$45,670	\$913	\$2,740	\$49,323	
LABOR SUBTOTAL				\$134,185	\$30,192	\$72,514	\$0	\$0	\$22,811	\$14,317	\$274,019	\$5,480	\$16,441	\$295,941	220.55%

MATERIAL
Description
MATERIAL SUBTOTAL

SUBTOTAL \$0.00 \$0.00 \$0.00

PURCHASED SERVICES

Description
PURCHASED SERVICES SUBTOTAL

SUBTOTAL \$0.00 \$0.00 \$0.00

OTHER

Description
OTHER SUBTOTAL

SUBTOTAL \$0.00 \$0.00 \$0.00

TOTAL - MECHANICAL

\$295,941

ESTIMATED COMMUTER RAIL OPERATING COSTS WESTERLY LAYOVER ANNUAL EQUIPMENT MAINTENANCE COSTS							YE 2000
LINE - PROVIDENCE TO WESTERLY							
MATERIAL			UNIT	EXTENDED	MANAGEMENT	MAT'L	
Description	Qty.		COST	SUBTOTAL	FEE	TOTALS	
<u>Locomotive Maintenance</u>					6.00%		
Preventive Maintenance - Diesels	4		\$51,000	\$204,000			
Running Repairs - Diesels	4		\$17,000	\$68,000			
Locomotive Subtotal			\$68,000	\$272,000	\$16,320	\$288,320	
<u>Cab Car/ Coach Maintenance</u>							
<u>Cab Cars</u>							
Preventive Maintenance - Cab Cars	4		\$51,000	\$204,000			
Running Repairs - Cab Cars	4		\$17,000	\$68,000			
Cab Car Subtotal			\$68,000	\$272,000	\$16,320	\$288,320	
<u>Coaches</u>							
Preventive Maintenance - Coaches	9		\$20,400	\$183,600			
Running Repairs - Coaches	9		\$6,800	\$61,200			
Coach Subtotal			\$27,200	\$244,800	\$14,688	\$259,488	
SUBTOTAL				\$788,800			
HANDLING SUBTOTAL					\$47,328	\$836,128	
TOTAL						\$836,128	
TOTAL COSTS (Annual)						\$836,128	

YE 2000

ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

LINE - PROVIDENCE TO WESTERLY
DIESEL FUEL DETAIL COSTS

FUEL COSTS

<u>LABOR</u>		<u>LABOR</u>		<u>COST</u>		<u>TOTAL</u>	
<u>Description</u>		<u>SUBTOTAL</u>		<u>SUBTOTAL</u>		<u>COSTS</u>	
Labor Subtotal		\$0		\$0		\$0	
<u>MATERIAL</u>		<u>UNIT</u>		<u>ANNUAL</u>			
<u>Description</u>		<u>COST</u>		<u>GALLONS</u>			
Diesel Fuel Materials		\$0.65		492,723		\$320,270	
Material Handling		10.26%				\$32,860	
TOTAL COST - DIESEL FUEL						\$353,130	
						\$353,130	

STATION MAINTENANCE COSTS (PURCHASED SERVICE)

<u>STATION</u>	<u>YEARLY UNIT COST (LABOR, EQUIP, MATERIALS)</u>
Westerly	\$0.00
Kingston	\$0.00
Wickford JCT.	\$10,000.00
Warwick	\$20,000.00
Providence	\$0.00
Total Station Costs	\$30,000.00

YE/ 3000
ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

ALTERNATIVE 2: CONNDOT SLE SERVICE EXTENSION
OPERATING COSTS BY CATEGORY
SCCRS: INTERSTATE SERVICE

EXPENDITURES	MONTHLY	YEARLY
1. Trackage Use Fee	\$117,284	\$1,407,405
2. Transportation Costs (Train & Engine)	\$163,795	\$1,965,542
3. Service Support Staff	\$51,341	\$616,088
4. Mechanical Costs (Car Cleaners)	\$18,496	\$221,956
5. Equipment Maintenance Costs	\$80,825	\$969,900
6. Fuel Costs	\$38,676	\$464,113
7. Station Maintenance	\$2,500	\$30,000
8. General and Administrative		INCLUDED IN COSTS
9. General and Administrative Overhead		INCLUDED IN COSTS
10. Operating Management Fee		INCLUDED IN COSTS
11. Corporate Services Fee		INCLUDED IN COSTS

TOTAL EXPENDITURES	\$5,675,004
PASSENGER REVENUES	NA
NON-TRANSPORTATION REVENUE	NA
TOTAL REVENUES	NA
TOTAL ESTIMATED COMMUTER COSTS	-\$5,675,004
ESTIMATED TRAIN MILES	215,860
ESTIMATED REVENUE TRAIN MILES	206,474
ESTIMATED COST/REVENUE TRAIN MILE	NA
	-\$27.49

YE 000
ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

RAIL OPERATING CHARACTERISTICS

PROPOSED SERVICE / TRAIN MILES PER DAY / FIVE DAYS A WEEK SERVICE/CONNDOT EXTENSION

TRAIN NO.	COMMENTS	ORIGIN	DESTINATION	PERIOD	CONNECTICUT		TRAIN MILES MASS & RHODE ISLAND		
					REV	DH	REV	DH	TOTALS
5802	Turn as 3645	Westerly	Providence	AM Rush	0	0	43	0	43
5804	Deadhead to Pawtucket	Westerly	Providence	AM Rush	0	0	43	4	47
5806	Deadhead to Pawtucket	Westerly	Providence	AM Rush	0	0	43	4	47
5808	Deadhead to Pawtucket	Westerly	Providence	AM Rush	0	0	43	4	47
5810	Deadhead to Pawtucket	Westerly	Providence	AM Rush	0	0	43	4	47
3645	Turn of 5802	Providence	New Haven	AM Rush	69	0	43	0	112
3626	Turns of 3645	New Haven	Westerly	PM	69	0	0	0	69
5813		Providence	Westerly	PM Rush	0	0	43	4	47
5700	Turn of 5813	Westerly	Providence	PM	0	0	43	4	47
5815		Providence	New Haven	PM Rush	69	0	43	4	116
3662	Turn of 5815	New Haven	Westerly	PM	69	0	0	0	69
5817		Providence	Westerly	PM Rush	0	0	43	4	47
5819		Providence	Westerly	PM Rush	0	0	43	4	47
5821	Turn of 5700	Providence	Westerly	PM Rush	0	0	43	0	43
TOTALS (DAILY TRAIN MILES)					276	0	516	36	828

PROPOSED SERVICE / TRAIN MILES AND FUEL CONSUMPTION

TRAIN MILES / DAY 828	AVERAGE FUEL CONSUMPTION GALLONS / MILE 3	GALLONS / DAY 2484
SERVICE DAYS / WEEK 5	TRAIN MILES / WEEK 4140	
WEEKS / YEAR 52.14	TRAIN MILES / YEAR 215,860	
GALLONS / MILE 3.0	REVENUE TRAIN MILES / YEAR 206,474	

1. .2000
ESTIMATED COMMUTER
RAIL OPERATING COSTS
WESTERLY LAYOVER

TRANSPORTATION COSTS (TRAIN AND ENGINE)

FY 1998 \$'S (MBTA Agreement)

LABOR	POS.	HOURLY	ANNUAL	ANNUAL	ANNUAL	TRANS.	TRANS.	VACATION	F.E.L.A.	LABOR	CORP	MANGMT	TOTAL	EQUIV
DESCRIPTION	QTY.	RATE	S-TIME	WAGES	WAGES	SYS. O/H	DIV. O/H	& HOLIDAY	8.71%	SUBTOTAL	SVC'S	FEE	COSTS	OH
			2080		25%	0%	0%	17%			2%	6%		ST LABOR
5 Crews														
Engineer	5	\$ 24.16	\$ 251,264	\$ 94,224	\$ 118,568	\$ 0	\$ 0	\$ 42,715	\$ 30,092	\$ 536,863	\$ 10,737	\$ 32,212	\$ 579,812	230.76%
Conductor	5	\$ 20.23	\$ 210,392	\$ 78,897	\$ 99,281	\$ 0	\$ 0	\$ 35,767	\$ 25,197	\$ 449,534	\$ 8,991	\$ 26,972	\$ 485,497	230.76%
Assistant Conductor	5	\$ 17.32	\$ 180,128	\$ 67,548	\$ 85,000	\$ 0	\$ 0	\$ 30,622	\$ 21,573	\$ 384,870	\$ 7,697	\$ 23,092	\$ 415,660	230.76%
Subtotal	15		\$ 641,784	\$ 240,669	\$ 302,850	\$ 0	\$ 0	\$ 109,103	\$ 76,862	\$ 1,371,288	\$ 27,425	\$ 82,276	\$ 1,480,969	
Additional Crew Time (Spares)														
Engineer	0.53	\$ 24.16	\$ 26,634	\$ 9,988	\$ 12,568	\$ 0	\$ 0	\$ 4,528	\$ 3,190	\$ 56,908	\$ 1,138	\$ 3,414	\$ 61,460	230.76%
Conductor	0.53	\$ 20.23	\$ 22,302	\$ 8,363	\$ 10,524	\$ 0	\$ 0	\$ 3,791	\$ 2,671	\$ 47,651	\$ 953	\$ 2,859	\$ 51,463	230.76%
Assistant Conductor	0.53	\$ 17.32	\$ 19,094	\$ 7,160	\$ 9,010	\$ 0	\$ 0	\$ 3,246	\$ 2,287	\$ 40,796	\$ 816	\$ 2,448	\$ 44,060	230.76%
Subtotal	1.59		\$ 68,029	\$ 25,511	\$ 32,102	\$ 0	\$ 0	\$ 11,565	\$ 8,147	\$ 145,354	\$ 2,907	\$ 8,721	\$ 156,983	
Contingency	20%		\$ 141,963	\$ 53,236	\$ 66,990	\$ 0	\$ 0	\$ 24,134	\$ 17,002	\$ 303,324	\$ 6,056	\$ 18,199	\$ 327,590	
LABOR SUBTOTAL			\$ 851,776	\$ 319,416	\$ 401,942	\$ 0	\$ 0	\$ 144,802	\$ 102,011	\$ 1,819,947	\$ 36,399	\$ 109,197	\$ 1,965,542	230.76%

TRANSPORTATION MATERIAL
Description
MATERIAL SUBTOTAL

SUBTOTAL \$0.00

PURCHASED SERVICES
Description
PURCHASED SERVICES SUBTOTAL

SUBTOTAL \$0.00

OTHER

Description	Unit Cost	Units	SUBTOTAL
TRACK USAGE FEES (MA & RI)	\$8.50 (Train mile)	143,906	\$1,223,204
TRACK USAGE FEES (CT)	\$2.56 (Train mile)	71,953	\$184,200
		215,860	

\$1,407,405

TOTAL TRANSPORTATION COSTS (TRAIN AND ENGINE)

\$3,372,947

ESTIMATE OF CREWS REQUIRED:

TRAIN NO.	ENGR	COND	ASSIT. COND.	TYPICAL CREW=	ON 3 HRS	OR	ON 4 HRS
5802	1	1	1	(1 DAY)	ON 3 HRS	REST 8 HRS	ON 4 HRS
5804	1	1	1		ON 3 HRS		
5806	1	1	1				
5808	1	1	1				
5810	1	1	1				
	5	5	5				
				6 HRS AT 1/2 TIME = 3 ST HRS	3 ST HRS = 2 HRS OT		
				2 HRS OT/8 HRS ST = 25% OT			

ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

SERVICE SUPPORT STAFF
FY 1998 \$'S (MBTA Agreement)

LABOR	POS.	HOURLY RATE	ANNUAL S-TIME WAGES	ANNUAL OVERTIME WAGES	FRINGE BENEFITS	TRANS. SYS./O/H	TRANS. DIV./O/H	VACATION	F.E.L.A.	LABOR SUBTOTAL	CORP SVCS	MNGMNT FEE	TOTAL COSTS	EQUIV OH
	QTY.		2080	10%	42.22% 13.25%	0%	0%	17%	8.71%		2%	6%		ST LABOR
Supt. Transp.	0	\$ 35.00	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Trainmaster	1	\$ 25.00	\$ 52,000	\$ 7,800	\$ 22,988	\$0	\$0	\$ 8,840	\$ 5,209	\$ 96,836	\$ 1,937	\$ 5,810	\$ 104,583	201.12%
Mech. Supt.	1	\$ 25.00	\$ 52,000	\$ 7,800	\$ 22,988	\$0	\$0	\$ 8,840	\$ 5,209	\$ 96,836	\$ 1,937	\$ 5,810	\$ 104,583	201.12%
Safety Supt.	1	\$ 25.00	\$ 52,000	\$ 7,800	\$ 22,988	\$0	\$0	\$ 8,840	\$ 5,209	\$ 96,836	\$ 1,937	\$ 5,810	\$ 104,583	201.12%
Subtotal	3		\$ 156,000	\$ 23,400	\$ 68,964	\$0	\$0	\$ 26,520	\$ 15,626	\$ 290,503	\$ 5,810	\$ 17,431	\$ 313,750	
Comptroller	0	\$ 25.00	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Revenue Supt.	1	\$ 22.00	\$ 45,760	\$ 6,864	\$ 20,229	\$0	\$0	\$ 7,779	\$ 4,584	\$ 85,216	\$ 1,704	\$ 5,113	\$ 92,033	201.12%
Admin. Assist.	1	\$ 10.00	\$ 20,800	\$ 3,120	\$ 9,195	\$0	\$0	\$ 3,536	\$ 2,083	\$ 38,735	\$ 775	\$ 2,324	\$ 41,833	201.12%
Subtotal	2		\$ 66,560	\$ 9,984	\$ 29,425	\$0	\$0	\$ 11,315	\$ 6,667	\$ 123,951	\$ 2,479	\$ 7,437	\$ 133,867	
Contingency	20%		\$44,512	\$6,677	\$19,678	\$0	\$0	\$7,567	\$4,459	\$82,892	\$1,658	\$4,974	\$89,523	
LABOR SUBTOTAL			\$267,072	\$40,061	\$118,066	\$0	\$0	\$45,402	\$26,751	\$497,352	\$9,947	\$29,841	\$537,140	201.12%

PURCHASED SERVICES

Accounting & Payroll Svcs.	COST/MO.	# MO.	
Office Rental (sq. ft.)	2000/mo.	12 mos.	\$24,000
Communications	1000/mo.	12 mos.	\$12,000
Furniture/Equipment	200/mo.	12 mos.	\$2,400
Office Supplies	800/mo.	12 mos.	\$9,600
Utilities (electric & heat)	200/mo.	12 mos.	\$2,400
Postage, mail, etc.	200/mo.	12 mos.	\$2,400
Business development	100/mo.	12 mos.	\$1,200
Travel expenses	250/mo.	12 mos.	\$3,000
Automobiles (2)	500/mo.	12 mos.	\$6,000
	1200/mo.	12 mos.	\$14,400
SUBTOTAL			\$77,400
		1.02	
Corporate Services Additive			\$78,948

TOTAL STAFF AND PURCHASED SERVICE COSTS

\$616,088

ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

MECHANICAL COSTS (STAFF AND PURCHASED SERVICES)
FY 1998 \$(SMBTA Agreement)

LABOR	DESCRIPTION	POS. QTY	HOURLY RATE	ANNUAL S-TIME WAGES 2080	ANNUAL OVERTIME WAGES 15%	FRINGE BENEFITS 46.51%	TRANS. SYS. O/H 0%	TRANS. DIV. O/H 0%	VACATION 17%	E.E.L.A. 8.71%	LABOR SUBTOTAL	CORP SVCS 2%	MNGMNT FEE 6%	TOTAL COSTS	EQUIV OH \$1 LABOR
Crew #1-First shift															
	Machinist	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	Electrician	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	Car Repairman	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	Subtotal	0		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Crew #2-Second shift															
	Machinist	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	Electrician	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	Car Repairman	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
	Car Cleaner	3	\$ 13.44	\$ 83,866	\$ 18,870	\$ 45,321	\$ -	\$ -	\$ 14,257	\$ 8,948	\$ 171,262	\$ 3,425	\$ 10,276	\$ 184,963	220.55%
	Subtotal	3		\$ 83,866	\$ 18,870	\$ 45,321	\$ -	\$ -	\$ 14,257	\$ 8,948	\$ 171,262	\$ 3,425	\$ 10,276	\$ 184,963	
	Contingency	20%		\$16,773	\$3,774	\$9,064	\$0	\$0	\$2,851	\$1,790	\$34,252	\$685	\$2,055	\$36,993	
	LABOR SUBTOTAL			\$100,639	\$22,644	\$54,386	\$0	\$0	\$17,109	\$10,738	\$209,515	\$4,110	\$12,331	\$221,956	220.55%

MATERIAL
Description
MATERIAL SUBTOTAL

SUBTOTAL \$0.00

\$0.00

PURCHASED SERVICES

Description
PURCHASED SERVICES SUBTOTAL

SUBTOTAL \$0.00

\$0.00

OTHER

Description
OTHER SUBTOTAL

SUBTOTAL \$0.00

\$0.00

TOTAL - MECHANICAL

\$221,956

ESTIMATED COMMUTER RAIL OPERATING COSTS WESTERLY LAYOVER ANNUAL EQUIPMENT MAINTENANCE COSTS									
LINE - PROVIDENCE TO WESTERLY									
MATERIAL	Qty.	UNIT	EXTENDED	SUBTOTAL	MANAGEMENT FEE	MAT'L	TOTALS		
Description		QOSI	SUBTOTAL		6.00%	TOTALS			
Locomotive Maintenance									
Preventive Maintenance - Diesels	5	\$46,500	\$232,500						
Running Repairs - Diesels	5	\$15,500	\$77,500						
Locomotive Subtotal		\$62,000	\$310,000	\$310,000	\$18,600	\$328,600			
Cab Car/ Coach Maintenance									
Cab Cars									
Preventive Maintenance - Cab Cars	5	\$46,500	\$232,500						
Running Repairs - Cab Cars	5	\$15,500	\$77,500						
Cab Car Subtotal		\$62,000	\$310,000	\$310,000	\$18,600	\$328,600			
Coaches									
Preventive Maintenance - Coaches	10	\$22,125	\$221,250						
Running Repairs - Coaches	10	\$7,375	\$73,750						
Coach Subtotal		\$29,500	\$295,000	\$295,000	\$17,700	\$312,700			
SUBTOTAL				\$915,000					
HANDLING SUBTOTAL					\$54,900				
TOTAL						\$969,900			
TOTAL COSTS						\$969,900			

YE. 2000
ESTIMATED COMMUTER RAIL OPERATING COSTS
WESTERLY LAYOVER

LINE - PROVIDENCE TO WESTERLY
DIESEL FUEL DETAIL COSTS

MECHANICAL COSTS

<u>LABOR</u>		<u>LABOR</u>		<u>COST</u>		<u>TOTAL</u>	
<u>Description</u>		<u>SUBTOTAL</u>		<u>SUBTOTAL</u>		<u>COSTS</u>	
Labor Subtotal		\$0		\$0		\$0	

<u>MATERIAL</u>		<u>UNIT *</u>		<u>ANNUAL</u>	
<u>Description</u>		<u>COST</u>		<u>GALLONS</u>	
Diesel Fuel Materials		\$0.65		647,579	
Material Handling		10.26%			

TOTAL COST - DIESEL FUEL		\$464,113		\$464,113	
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STATION MAINTENANCE COSTS (PURCHASED SERVICE)

<u>STATION</u>	<u>YEARLY UNIT COST (LABOR, EQUIP., MATERIALS)</u>
Westerly	\$0.00
Kingston	\$0.00
Wickford JCT.	\$10,000.00
Warwick	\$20,000.00
Providence	\$0.00
Total Station Costs	\$30,000.00

YE, 000
ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

ALTERNATIVE 3: MBTA SERVICE EXTENSION
OPERATING COSTS BY CATEGORY
SCCRS: INTERSTATE SERVICE

<u>EXPENDITURES</u>	<u>MONTHLY</u>	<u>YEARLY</u>
1. Trackage Use Fee	\$180,600	\$2,167,199
2. Transportation Costs (Train & Engine)	\$220,186	\$2,642,227
3. Service Support Staff	\$20,917	\$251,000
4. Mechanical Costs (Car Cleaners)	\$18,496	\$221,956
5. Equipment Maintenance Costs	\$85,683	\$1,028,200
6. Shared Equipment Maintenance Costs	\$55,650	\$667,800
7. Fuel Costs	\$45,683	\$548,192
8. Station Maintenance	\$2,500	\$30,000
9. General and Administrative		INCLUDED IN COSTS
10. General and Administrative Overhead		INCLUDED IN COSTS
11. Operating Management Fee		INCLUDED IN COSTS
12. Corporate Services Fee		INCLUDED IN COSTS
TOTAL EXPENDITURES		\$7,556,574
PASSENGER REVENUES	NA	0
NON-TRANSPORTATION REVENUE	NA	\$0
TOTAL REVENUES	NA	\$0
TOTAL ESTIMATED COMMUTER COSTS		-\$7,556,574
ESTIMATED TRAIN MILES		254,965
ESTIMATED REVENUE TRAIN MILES		168,152
ESTIMATED COST/TRAIN MILE	NA	-\$44.94

YE. .300
ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

RAIL OPERATING CHARACTERISTICS

PROPOSED SERVICE / TRAIN MILES PER DAY / FIVE DAYS A WEEK SERVICE/MBTA EXTENSION

TRAIN NO.	COMMENTS	ORIGIN	DESTINATION	PERIOD	DEADHEAD	TRAIN MILES REVENUE	TOTAL
M799	New MBTA Train Set; Turn as 806	Providence	Westerly	Reverse Commute	0	43	43
801	Existing MBTA Train; Turn as 810	Providence	Westerly	Reverse Commute	0	43	43
802/802DH	Existing MBTA Train; Pawtucket Layover	Westerly	Providence	AM Rush	47	43	90
804/804DH	Existing MBTA Train; Pawtucket Layover	Westerly	Providence	AM Rush	47	43	90
806	Existing MBTA Train; Turn of M799	Westerly	Providence	AM Rush	0	43	43
808/808DH	Existing MBTA Train; Pawtucket Layover	Westerly	Providence	AM Rush	47	43	90
810	Existing MBTA Train; Turn of 801	Westerly	Providence	AM Rush	0	43	43
813	New MBTA Train Set; Turn as 822	Providence	Westerly	PM Rush	0	43	43
815	Existing MBTA Train; Turn as 824	Providence	Westerly	PM Rush	0	43	43
817/817DH	Existing MBTA Train; Pawtucket Layover	Providence	Westerly	PM Rush	47	43	90
819/819DH	Existing MBTA Train; Pawtucket Layover	Providence	Westerly	PM Rush	47	43	90
821/821DH	Existing MBTA Train; Pawtucket Layover	Providence	Westerly	PM Rush	47	43	90
822	Existing MBTA Train; Turn of 813	Westerly	Providence	Reverse Commute	0	43	43
825/825DH	Existing MBTA Train; Turn of 824	Providence	Westerly	PM Rush	47	43	90
824	Existing MBTA Train; Turn of 815	Westerly	Providence	Reverse Commute	4	43	47
TOTALS (DAILY TRAIN MILES)					333	645	978

PROPOSED SERVICE / TRAIN MILES AND FUEL CONSUMPTION

TRAIN MILES / DAY 978	AVERAGE FUEL CONSUMPTION GALLONS / MILE 3	GALLONS / DAY 2934
SERVICE DAYS / WEEK 5	TRAIN MILES / WEEK 4890	
WEEKS / YEAR 52.14	TRAIN MILES / YEAR 254,965	
GALLONS / MILE 3.0	REVENUE TRAIN MILES / YEAR 168,152	

ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

TRANSPORTATION COSTS (TRAIN AND ENGINE)

FY 1998 \$'s (MBTA Agreement)

LABOR	DESCRIPTION	POS. QTY.	HOURLY RATE	ANNUAL S-TIME WAGES	ANNUAL OVERTIME WAGES	FRINGE BENEFITS	TRANS. SYS. O/H	TRANS. DIV. O/H	VACATION & HOLIDAY	F.E.L.A.	LABOR SUBTOTAL	CORP SVCS	MNGMNT FEE	TOTAL COSTS	EQUIV OH \$/LABOR
				2080	10%	42.22%	0%	0%	17%	8.71%		2%	6%		
						13.25%									
	<u>Crews</u>														
	Engineer	6	\$ 24.16	\$ 301,517	\$ 45,228	\$ 133,293	\$ -	\$ -	\$ 51,258	\$ 30,201	\$ 561,497	\$ 11,230	\$ 33,690	\$ 606,416	201.12%
	Conductor	6	\$ 20.23	\$ 252,470	\$ 37,871	\$ 111,611	\$ -	\$ -	\$ 42,920	\$ 25,269	\$ 470,160	\$ 9,403	\$ 28,210	\$ 507,773	201.12%
	Assistant Conductor	12	\$ 17.32	\$ 432,307	\$ 64,846	\$ 191,112	\$ -	\$ -	\$ 73,492	\$ 43,302	\$ 805,060	\$ 16,101	\$ 48,304	\$ 869,465	201.12%
	Subtotal	24		\$ 986,294	\$ 147,944	\$ 436,016	\$ -	\$ -	\$ 167,670	\$ 98,792	\$ 1,836,717	\$ 36,734	\$ 110,203	\$ 1,983,654	
	<u>Additional Crew Time (Spare)</u>														
	Engineer	0.66	\$ 24.16	\$ 33,167	\$ 4,975	\$ 14,662	\$ -	\$ -	\$ 5,638	\$ 3,322	\$ 61,765	\$ 1,235	\$ 3,706	\$ 66,706	201.12%
	Conductor	0.66	\$ 20.23	\$ 27,772	\$ 4,166	\$ 12,277	\$ -	\$ -	\$ 4,721	\$ 2,782	\$ 51,718	\$ 1,034	\$ 3,103	\$ 55,855	201.12%
	Assistant Conductor	1.32	\$ 17.32	\$ 47,554	\$ 7,133	\$ 21,022	\$ -	\$ -	\$ 8,084	\$ 4,763	\$ 88,557	\$ 1,771	\$ 5,313	\$ 95,641	201.12%
	Subtotal	2.64		\$ 108,492	\$ 16,274	\$ 47,962	\$ -	\$ -	\$ 18,444	\$ 10,867	\$ 202,039	\$ 4,041	\$ 12,122	\$ 219,202	
	Contingency	20%		\$218,957	\$32,844	\$96,796	\$0	\$0	\$37,223	\$21,932	\$407,751	\$9,155	\$24,465	\$440,371	
	LABOR SUBTOTAL			\$1,313,744	\$197,062	\$580,773	\$0	\$0	\$223,337	\$131,591	\$2,446,507	\$48,930	\$146,790	\$2,642,227	201.12%

TRANSPORTATION MATERIAL

Description

MATERIAL SUBTOTAL

SUBTOTAL \$0.00

PURCHASED SERVICES

Description

PURCHASED SERVICES SUBTOTAL

SUBTOTAL \$0.00

OTHER

Description

TRACK USAGE FEES

Unit Cost \$ 8.50 (Train mile) Units 254,965 SUBTOTAL \$2,167,199

\$2,167,199

TOTAL TRANSPORTATION COSTS

\$4,809,427

Estimate of Crews Requirements: 3 Person Train Crew - 1 Cond., 2 Asst. Cond

	ENGR	COND	ASST. COND
1 Crew for M799 & 822 =	1	1	2
1 Crew for 808 & 813 =	1	1	2
#802,804,810, 4@3HRS = 12HRS			
#815,824,817,819,821,825 6@3HRS = 18HRS			
30HRS	4	4	8
	6	6	12

ESTIMATED COMMUTING RAIL OPERATING COSTS
PAWTUCKET LAYOVER

MECHANICAL COSTS (STAFF AND PURCHASED SERVICES)

FY 1988 \$(MBTA Agreement)

LABOR	DESCRIPTION	POS. QTY.	HOURLY RATE	ANNUAL S-TIME WAGES 2080	ANNUAL OVERTIME WAGES 15%	FRINGE BENEFITS 48.51% 24.56%	TRANS. SYS. OH 0%	TRANS. DIV. OH 0%	VACATION & HOLIDAY 17%	E.E.L.A. 8.71%	LABOR SUBTOTAL	CORP SVCS 2%	MGNT FEE 6%	TOTAL COSTS	EQUIV OH \$LLABOR
Crew #1-First shift															
	Machinist	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Electrician	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Car Repairman	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Subtotal	0		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Crew #2-Second shift															
	Machinist	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Electrician	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Car Repairman	0	\$ 16.14	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Car Cleaner	3	\$ 13.44	\$ 83,866	\$ 18,870	\$ 45,321	\$ -	\$ -	\$ 14,257	\$ 8,948	\$ 171,262	\$ 3,425	\$ 10,276	\$ 184,963	\$ 220.55
	Subtotal	3		\$ 83,866	\$ 18,870	\$ 45,321	\$ -	\$ -	\$ 14,257	\$ 8,948	\$ 171,262	\$ 3,425	\$ 10,276	\$ 184,963	\$ 220.55
	Contingency	20%		\$ 16,773	\$ 3,774	\$ 9,084	\$ 0	\$ 0	\$ 2,851	\$ 1,790	\$ 34,252	\$ 885	\$ 2,055	\$ 36,953	\$ 220.55
	LABOR SUBTOTAL			\$ 100,639	\$ 22,644	\$ 54,385	\$ 0	\$ 0	\$ 17,109	\$ 10,738	\$ 205,515	\$ 4,110	\$ 12,331	\$ 221,956	\$ 220.55

MATERIAL
Description
MATERIAL SUBTOTAL

SUBTOTAL \$0.00 \$0.00

\$0.00

PURCHASED SERVICES
Description

PURCHASED SERVICES SUBTOTAL

SUBTOTAL \$0.00 \$0.00

\$0.00

OTHER
Description

OTHER SUBTOTAL

SUBTOTAL \$0.00 \$0.00

\$0.00

TOTAL - MECHANICAL

\$221,956

YE 2000
ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER
ANNUAL EQUIPMENT MAINTENANCE COSTS

LINE - PROVIDENCE TO WESTERLY

LABOR, EQUIPMENT & MATERIAL						MANAGEMENT FEE	MAT'L TOTALS
Description	Qty.	UNIT COST	EXTENDED SUBTOTAL	SUBTOTAL	6%		
Locomotive Maintenance							
Preventive Maintenance - Diesels	2	\$86,250	\$172,500				
Running Repairs - Diesels	2	\$28,750	\$57,500				
Locomotive Subtotal		\$115,000	\$230,000	\$230,000	\$13,800	\$243,800	
Cab Car/Coach Maintenance							
Cab Cars							
Preventive Maintenance - Cab Cars	1	\$60,000	\$60,000				
Running Repairs - Cab Cars	1	\$20,000	\$20,000				
Cab Car Subtotal		\$80,000	\$80,000	\$80,000	\$4,800	\$84,800	
Coaches							
Preventive Maintenance - Coaches	11	\$45,000	\$495,000				
Running Repairs - Coaches	11	\$15,000	\$165,000				
Coach Subtotal		\$60,000	\$660,000	\$660,000	\$39,600	\$699,600	
SUBTOTAL				\$970,000			
HANDLING SUBTOTAL					\$58,200	\$1,028,200	
TOTAL							
TOTAL COSTS (Annual)						\$1,028,200	

(Equipment maintenance costs are for the equipment specifically purchased for the service. Does not include MBTA equipment already in service that is used in the State of Rhode Island.)

YE. 1000

ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

ANNUAL SHARED EQUIPMENT MAINTENANCE COSTS

LINE - PROVIDENCE TO WESTERLY

LABOR, EQUIPMENT & MATERIAL

<u>Description</u>	<u>Qty.</u>	<u>COST</u>	<u>SUBTOTAL</u>	<u>FEE</u>	<u>TOTALS</u>	
<u>Locomotive Maintenance</u>						
Preventive Maintenance - Diesels	2	\$43,125	\$86,250	6%		
Running Repairs - Diesels	2	\$14,375	\$28,750			
Locomotive Subtotal		\$57,500	\$115,000		\$6,900	\$121,900
<u>Cab Car/ Coach Maintenance</u>						
<u>Cab Cars</u>						
Preventive Maintenance - Cab Cars	2	\$30,000	\$60,000			
Running Repairs - Cab Cars	2	\$10,000	\$20,000			
Cab Car Subtotal		\$40,000	\$80,000	\$4,800	\$84,800	

Coaches

Preventive Maintenance - Coaches	14.5	\$22,500	\$326,250		
Running Repairs - Coaches	14.5	\$7,500	\$108,750		
Coach Subtotal		\$30,000	\$435,000	\$26,100	\$461,100

MATERIAL (ONLY) SUBTOTAL
MATERIAL HANDLING SUBTOTAL
MATERIAL SUBTOTAL

\$630,000
\$37,800
\$667,800

TOTAL SHARED COSTS (Annual)

\$667,800

(Shared equipment costs are based on the use of existing MBTA equipment in the State of Rhode Island. There is about an equal train mile split of MBTA equipment in service between Massachusetts and Rhode Island.)

Equipment consists of "T" trains at this time.

	Loco	Flat	BLC	
802	1	1	6	@ 50%= 2 Locos
804	1	1	7	@ 50%= 2 Cab cars
808	1	2	5	@ 50%= 14.5 Coaches
810	1	1	6	
Totals	4	5	24	

YE. 2000
ESTIMATED COMMUTER RAIL OPERATING COSTS
PAWTUCKET LAYOVER

LINE - PROVIDENCE TO WESTERLY
DIESEL FUEL DETAIL COSTS

FUEL COSTS

<u>LABOR</u> Description	UNIT	ANNUAL GALLONS	COST SUBTOTAL	COST SUBTOTAL	TOTAL COSTS
Labor Subtotal			\$0	\$0	\$0

MATERIAL

Description	UNIT COST	ANNUAL GALLONS
Diesel Fuel Materials	\$0.65	764,894

Material Handling 10.26%

\$51,011

TOTAL COST - DIESEL FUEL

\$548,192

STATION MAINTENANCE COSTS (PURCHASED SERVICE)

STATION	YEARLY UNIT COST (LABOR, EQUIP, MATERIALS)
Westerly	\$0.00
Kingston	\$0.00
Wickford JCT.	\$10,000.00
Warwick	\$20,000.00
Providence	\$0.00

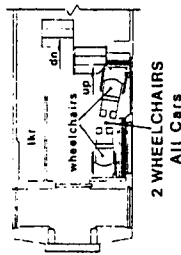
Total Station Costs

\$30,000.00

EQUIPMENT SPECIFICATIONS

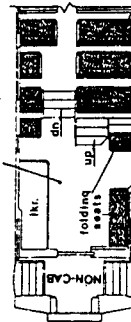
MBTA ARRANGEMENT

PASSENGER ACCOMMODATIONS		
TYPE OF CAR	NUMBER OF PASSENGERS	
CAB CARS	175 SEATS EACH	
NON - CAB CARS	185 SEATS EACH	
ALL CARS	4 WHEELCHAIRS EACH	

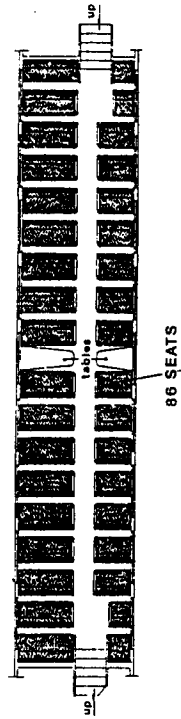


MIDDLE LEVEL #1 End

5 SEATS
Non-Cab Cars



86 SEATS
Non-Cab Cars



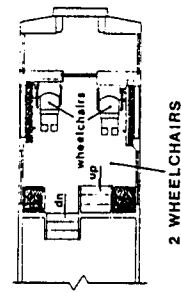
UPPER LEVEL - All Cars

86 SEATS



77 SEATS
Cab Cars

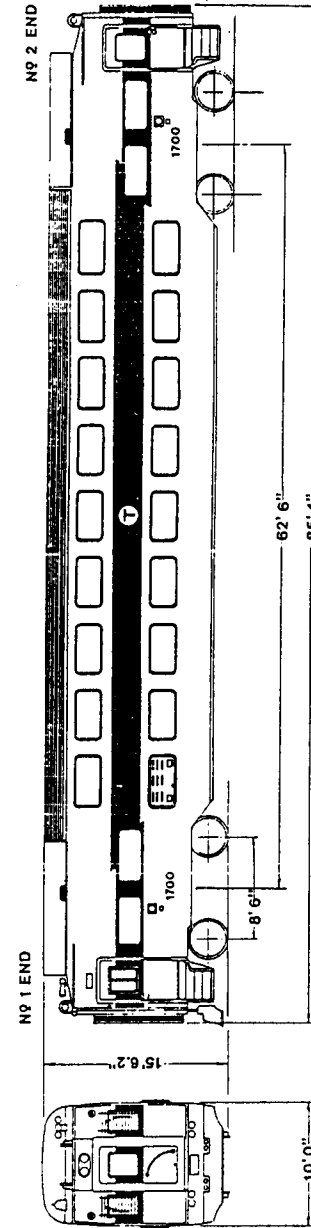
LOWER LEVEL



MIDDLE LEVEL #2 End - All Cars

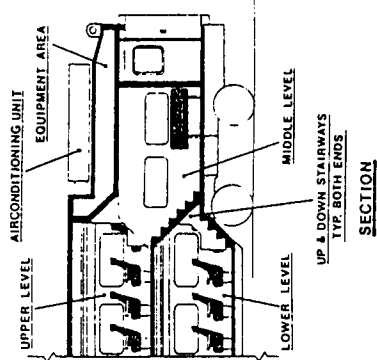
8 SEATS

PLAN VIEWS



END VIEW

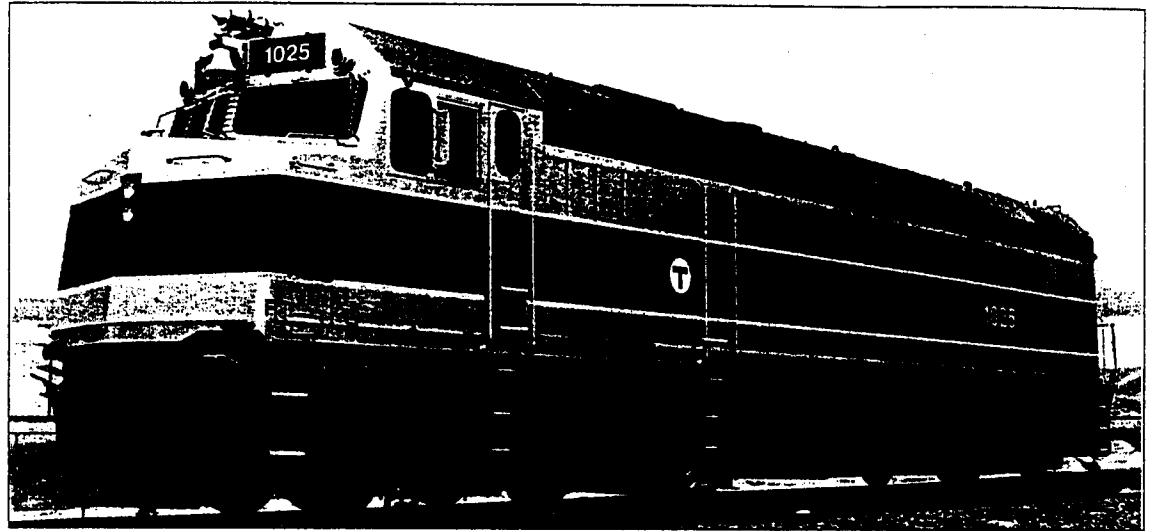
SIDE VIEW



SECTION

Boise Locomotive, a former Morrison Knudsen/MK Rail Company

Massachusetts Bay
Transportation
Authority's
F40PHM-2C,
a remanufactured
passenger/transit -
propulsion diesel
engine from Boise
Locomotive
[Photo and illustration
courtesy of Boise
Locomotive]

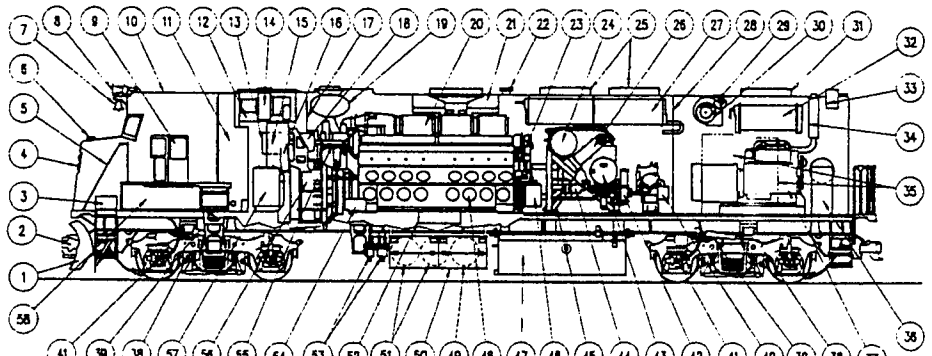


Specifications for F40PHM-2C

Locomotive type(B-B) 0440
Locomotive horsepower3,000
Propulsion diesel engine
Model645E3C
TypeTurbocharged
Number of cylinders16
Cylinder arrangement45° "V"
Cylinder bore and stroke9 1/8" x 10"
Operating principle2 stroke cycle,
turbocharged unit injection, water cooled
Full speed904 rpm
Idle speed
Normal318 rpm
Low255 rpm
Main generator modelAR10A9/D14
Traction alternator (rectified output)AR10
Number of poles10
Nominal voltage (DC)600
Maximum continuous, current rating4,200 amp
Companion alternatorD14
Nominal voltage (AC)215V
HEP (head-end power) diesel engine
ModelCummins-KTTA-19-G2
TypeTurbocharged
Number of cylinders6
Cylinder arrangementIn-line
Cylinder bore and stroke6 1/4" x 6 1/2"
Operating principle4 stroke cycle,
turbocharged, aftercooled
Full speed1,800 rpm
HEP (head-end power) generator
ModelMarathon magne one
Available power output500kW
Nominal voltage (AC)480
Maximum continuous current rating750 amps/phase
Frequency (at 1,800 rpm)60 Hz
Auxiliary generator voltage (DC)74V
Rating14kW
Traction motors
ModelD77
Number4
TypeDC, series wound, axle hung
Current rating, maximum continuous1,050 amp
Driving wheels
Number4 pair
Diameter40"
Speed limitations with gear ratio
Gear ratio57:20
Max. mph (based on railroad overspeed
limit setting)90 mph

Minimum continuous mph16.3
Curve negotiation capability
Truck swing limits single curve negotiation
to a 33° or 174' radius curve
Two similar units coupled in multiple limited by
coupler swing to a 26° or 222' radius curve
(equipped with "F" couplers)
Locomotive coupled to an MBTA 85'4" passenger
car limited by car coupler swing to an 20° or 285'
radius curve (equipped with "F" coupler)
Locomotive coupled to an MBTA 85'4" passenger
car limited by cabling to a number 89 crossover on
12'2" track centers
Major dimensions
Height over cooling fans15'4"
Width over hand rails and vents10'8 1/2"
Distance over coupler pulling faces64'3"
Loaded weight on rails (nominal)280,000 lbs
Weight on drivers100%

Supplies
Lube oil capacity basic oil pan243 gal
Volume between low and full on
dipstick basic (oil pan)47 gal
Cooling system capacity with
electric cab heaters254 gal
Sand capacity
Hood end sandboxes24.5 cu ft
Cab end sandboxes24.5 cu ft
Fuel capacity2,000 gal
Air brakesType 26L
Air compressor
Type2 stage
Number of cylinders3
Capacity (at 900 rpm)254 cu ft/min
Air compressor coolingEngine coolant
Lube oil capacity10 1/2 gal
Storage battery
Number of cells32
Voltage64
Rating (8 hour)420 amp/hr

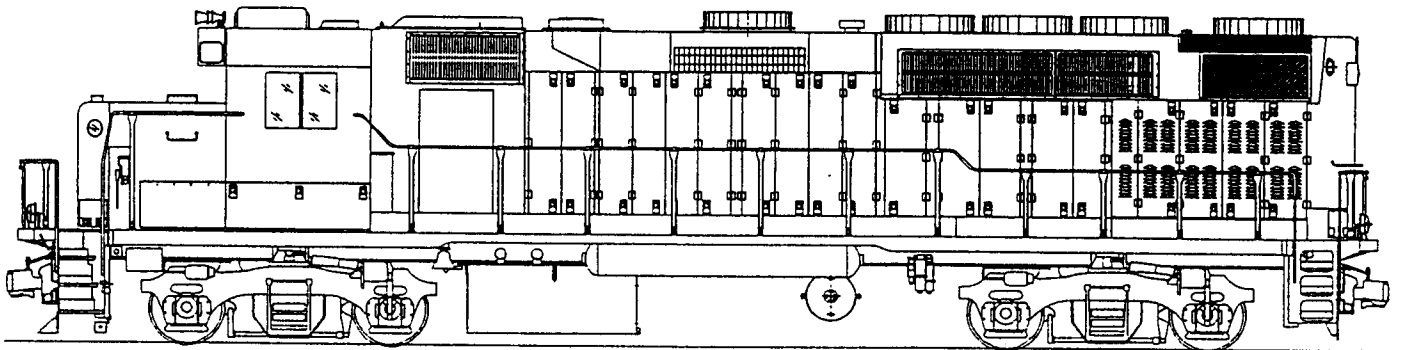
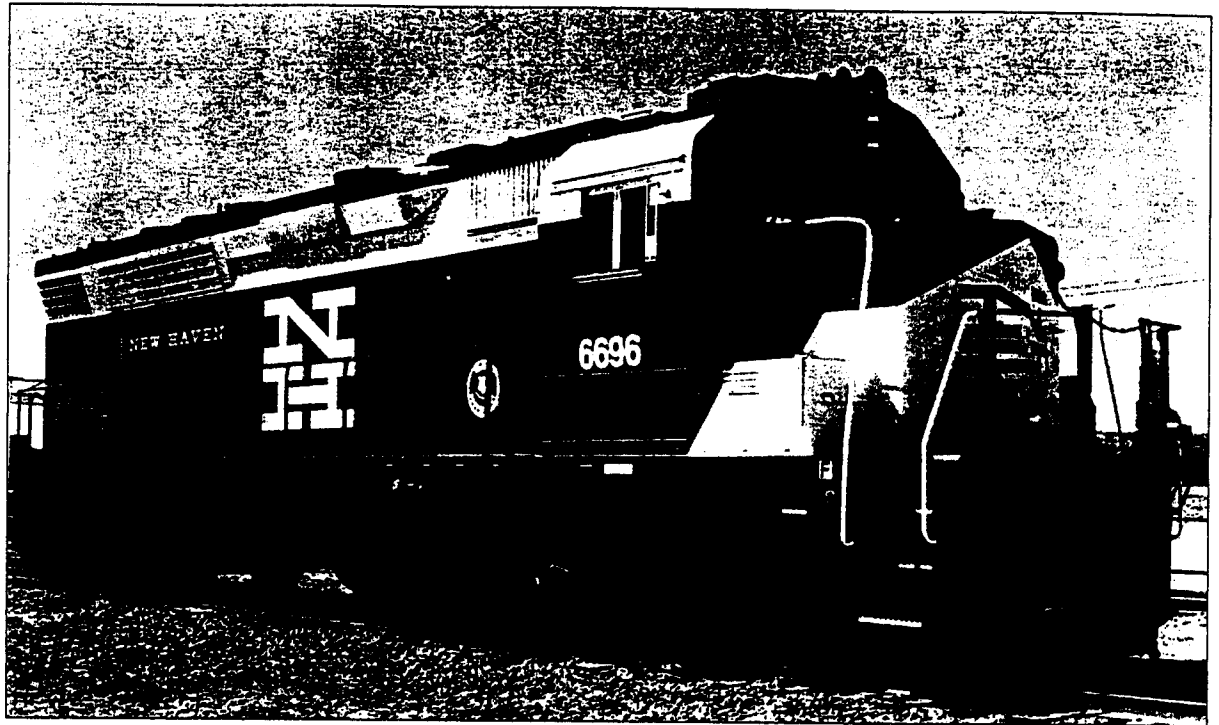


1. Snow Plow
2. Coupler - Type "F"
3. Sand Trap Access
4. Headlight
5. Collision Post
6. Sand Box Filler
7. Bell
8. Horn
9. Control Stand
10. Provision for Air Conditioner
11. High Voltage Cabinet
12. Carbody Inertial Filter
13. Engine Air Filter
14. Inertial Air Blower
15. Traction Motor Blower
16. Generator Blower
17. Generator Partition
18. Aux. Generator - 14KW DC
19. Silencer
20. Exhaust Manifold
21. Dynamic Brake
22. Engine Room Vent
23. Governor
24. Engine Water Tank
25. Cooling Fans - Q Type
26. Lube Oil Cooler
27. Main Radiators - 8 in.
28. HEP Compartment Partition
29. HEP Filter Air Inlet
30. HEP Filter Blower Assembly

31. HEP Cooling Fan - Q Type
32. HEP Cooling Radiators - 6 in.
33. HEP Engine Water Tank
34. HEP Engine Silencer
35. HEP Control and Relay Cabinets
36. Hand Brake
37. Head End Power Plant
38. GP Truck - Single Shoe
39. Yaw Dampers
40. Air Compressor
41. Axle Speed Sensors
42. Fuel Filter
43. Lube Oil Filter
44. Fuel Pump
45. Accessory Rack
46. Lube Oil Strainer
47. Fuel Tank
48. 16-64SE3C Engine
49. HEP Air Start Reservoir
50. Battery Box
51. Main Air Reservoirs
52. Oil Pan
53. Air Dryer
54. Starting Motors
55. Turbocharger
56. AR10A9 Main Alternator
57. HV Cabinet Air Filter
58. Air Brake Equipment

GEC ALSTHOM AMF TRANSPORT INC.

GEC ALSTHOM
AMF TRANSPORT INC.'s
CONN-DOT
GP40-2H
passenger
locomotive
(Photo and
illustration
courtesy of GEC
ALSTHOM AMF
TRANSPORT
INC.)



Specifications for GP40-2H

Outline dimensions

Distance over coupler pulling faces	.62'5"
Height over cooling fan guard	.15'4"
Width	.10'0"
Truck bolsters center	.37'3"
Truck wheelbase	.9'0"

Locomotive weight and capacities

Fuel	1,500 US gals
Lubricating oil	.396 US gals
Engine cooling water	.254 US gals
Pollution tank	.75 US gals
Sand	.50 cu ft
Weight on rails	.273,000 lbs

Commodities

Axles arrangement	.B-B
Traction horsepower	.3,000 (into main alternator)
Tractive effort	.45,700 lbs at 17 mph
Top operating speed	.102 mph

Features

Diesel engine	.16V-645E3B
Main alternator	.AR10A6
Companion alternator	.D14

Traction motors	.D78
Auxiliary generator	.18kW brushless
Dynamic brake	.Blended with pneumatic brakes
Wheel diameter	.40"
Gear ratio	.57:20
Radiator cooling fans	.Variable voltage, variable frequency AC(3)
Compressor	.WBO 3 cylinder, gear type pump
Traction motor blower	.Single mechanical

HEP specifications

HEP generator set power output	.425kW @ 0.8 power factor
HEP generator set voltage	.480VAC, 3-phase, 60Hz
HEP diesel engine	.Cummins KTA-19G2
HEP diesel engine power output	.600 hp @ 1,800 rpm
HEP alternator type	.Marathon Magnamax 571 RSL

Added features

Air conditioning	
Cab signal system	
Dash-2 electrical (main) cabinet	
Extra cooling: 8 rows radiators	
Fully insulated cab	
"G G" journal bearings	
High-speed trucks	

"SHORELINER" PUSH-PULL PASSENGER COACH (SLE)



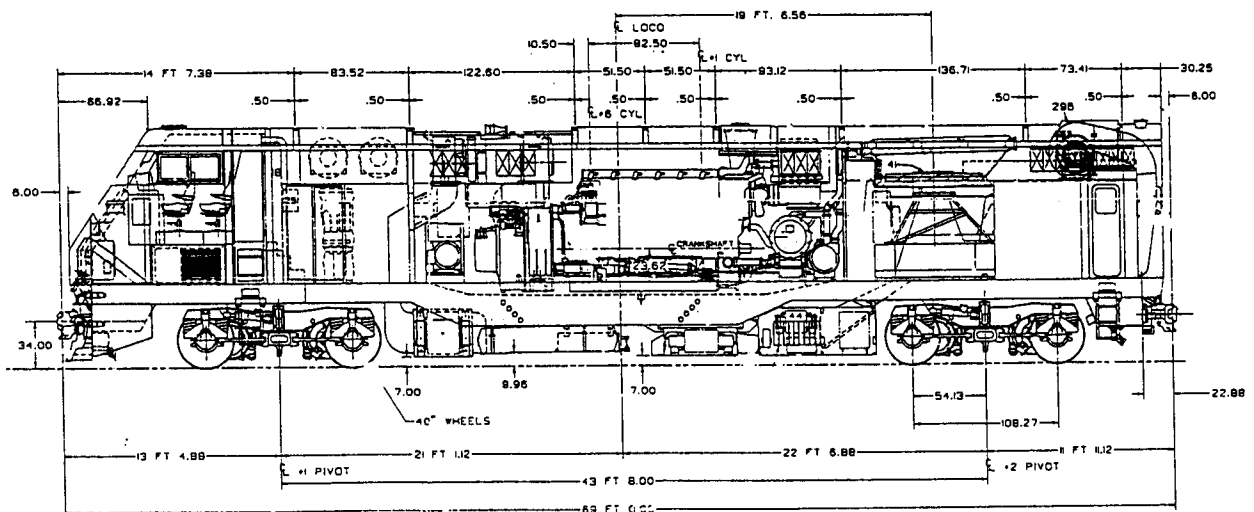
"SHORELINER" PUSH-PULL PASSENGER CAR (SHORE LINE EAST) INTERIOR





Front truck with collector shoe in raised position (above)

GE's GENESIS Series 2 high-speed passenger locomotive equipped for electric or diesel electric operation [Photos and illustration courtesy of GE Transportation Systems]



Specifications for GENESIS Series 2

ModelP32AC-DM-110 mph
Locomotive horsepower3,200, 800kW HEP,
with dual power 650VDC third rail capability
ArrangementB-B: trucks fitted with
6 third rail power pick-up mechanisms
Weight275,000 lbs

Engine model7FDL12, 3,200 hp with EFI
Traction equipment
Alternator1-GMG195A1
Motors4-GEB15 AC, axle suspended
Inverters4-Pulse width modulated, VVVF,
one per traction motor for single axle control

Head-end powerInverter rated 800kW,
480V, 3-phase, 60 Hz
Air brake schedule26L integrated electronic
air brake control by NYAB/Knorr
Air compressor1-Sullair 8E rotary

Features

Aerodynamic monocoque carbody
Enhanced collision capability
Cab signal equipped - Micro Cabmatic® by GRS

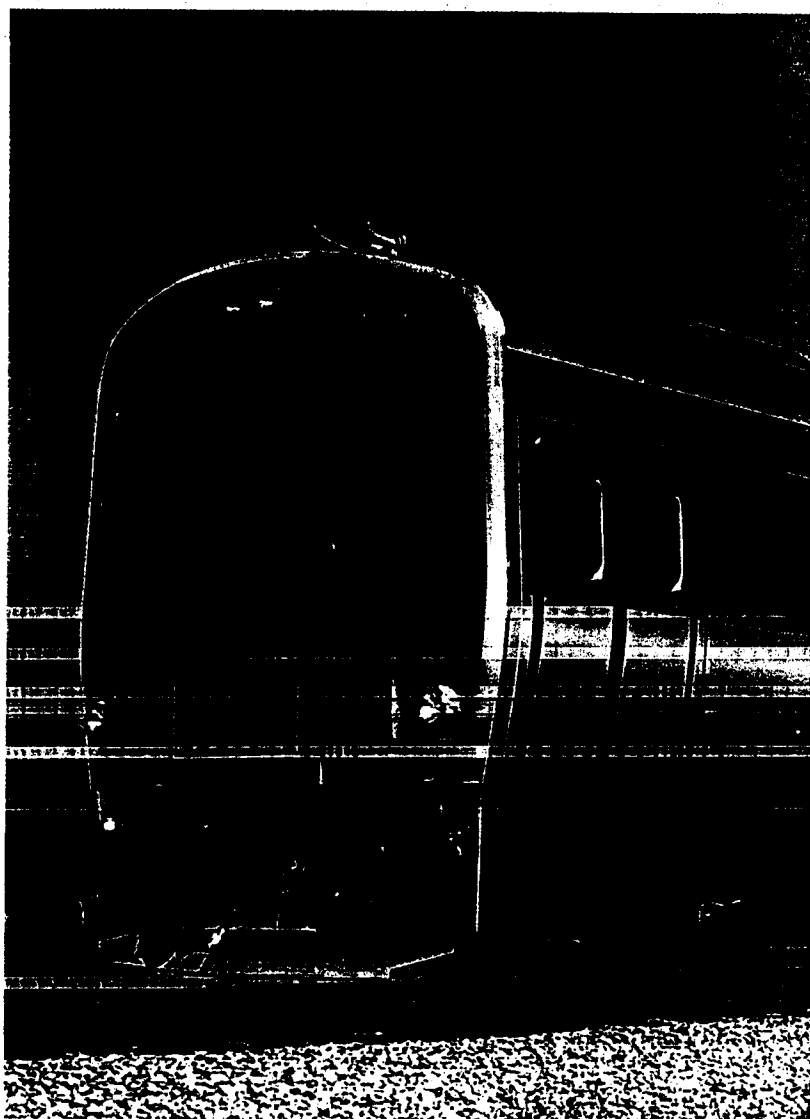
Microcomputer-based integrated control,
full diagnostics
Engine layover system by Kim Hot Start
Compartmentalized, spill-resistant fuel tank

Automatic parking brake
Remote engine starting
Retractable third rail shoes
Blended dynamic/air brake system

Dual mode with seamless transition
Hostler stand
Battery jog capability

Diesel Multiple Unit

Flexible Transportation



Bombardier's modern Diesel Multiple Unit (DMU) with improved technology is designed to meet the stringent requirements of North America's railroads. The cars meet all applicable FRA, ADA and AAR requirements.

The Bombardier DMU offers a high degree of flexibility in meeting customer traffic demands. It is ideal for operating in non-electrified rail corridors, for accommodating new service start-ups which have low passenger volume, for providing feeder service to remote areas on a regional rail system and for allowing high frequency service during off-peak demand without the use of a locomotive.

The basic Bombardier DMU configuration is a coupled pair with each car powered by two engines and two transmissions having sufficient power to include an intermediate trailer car if required. The modular carbody design permits various side door configurations for both high and low platform boarding, as well as various interior seating arrangements.

The technological improvements include: a state-of-the-art monitoring system to control and provide diagnostic information about the engines, as well as other major car systems; stainless steel carbodies that ensure protection against corrosion; and Bombardier's fabricated lightweight B-65P outboard bearing trucks which provide a smooth and stable ride at high speed.

These technological advances provide both passengers and operators with high performance equipment that is safe and economical to operate. This improved car design is available to rail authorities seeking modern DMUs to meet their equipment needs.



Bombardier Transit Corporation

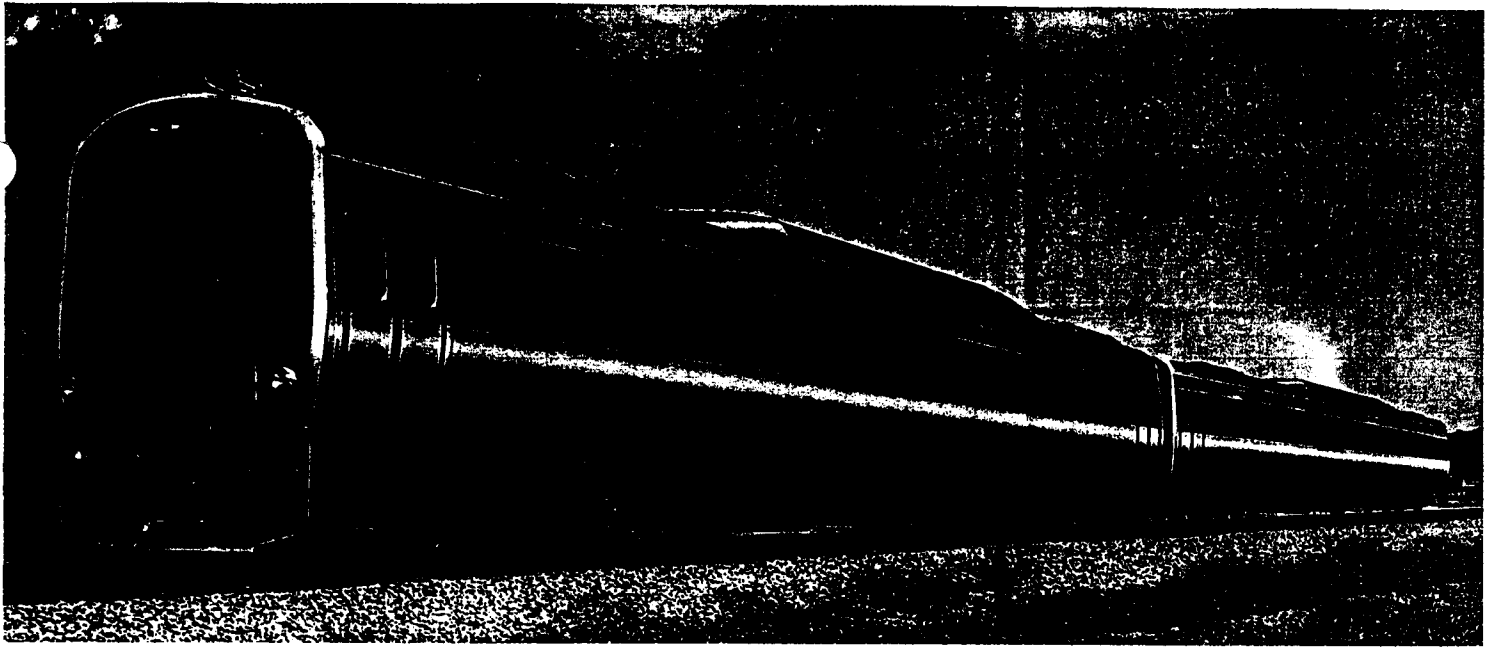
450 Lexington Avenue, Suite 3260
New York, NY 10017
Phone (212) 682-5860 Facsimile (212) 682-5767

Bombardier Inc.

Transportation Equipment Group - North America

1101 Parent Street
Saint-Bruno, Québec J3V 6E6
Phone (514) 441-2020 Facsimile (514) 441-1515

INNOVATION IN MOTION



General Data

Type of Vehicle	Diesel Multiple Unit (DMU)
Train Consist	Coupled Pair (Motor-Motor), or Triplet (Motor-Trailer-Motor)

System Description

Propulsion system	Two diesel engines per motor car, 400 hp (300 kW) per engine.
Transmission	Hydraulic - two stage driving inboard axles.
Cooling System	Roof-mounted coolant radiators with hydraulic fan motors.
Fuel Tank Capacity	600 gal./2270 l.
Truck type	Outboard bearing, fabricated frame
Primary suspension	Helicoil springs
Secondary suspension	Air springs
Brakes	Friction tread brakes on all wheels, two disc brakes on each unpowered axle and dynamic retarder within transmission
Heating	Overhead and Floor
Air conditioning	Two 6.5 ton roof-mounted self-contained units
Carbody	Stainless Steel
Coupler- "A" end and "B" end	Tightlock with type "H" head

Electrical System

Auxiliary Power	One diesel engine powered APU per motor car
Auxiliary Voltage	480 VAC / 3 Ph / 60 Hz - 120 VAC / 3 Ph / 60 Hz
Low Voltage	37.5 VDC or 72 VDC
Lighting (passenger area)	Fluorescent

Performance

	Metric	Imperial
Maximum operating speed level tangent track	160 km/h	100 mph
Acceleration rate estimates 0 - 50 mph (80 km/h)	1.40 kmphps	0.85 mphps
-Distance from 0 to 50 mph (80 km/h)	0.64 km	0.4 miles
-Distance from 0 to 80 mph (129 km/h)	3.37 km	2.1 miles
Service braking rate	2.88 kmphps	1.80 mphps
Emergency braking rate	3.45 kmphps	2.16 mphps
Minimum radius of horizontal curve	76.2 m	250'
Minimum vertical curve radius	609.6 m	2,000'

Dimensions

	Metric	Imperial
Length (over coupler/drawbar faces)	26 010 mm	85' 4"
Width (over side sheets)	3 200 mm	10' 6"
Width (over threshold)	3 048 mm	10' 0"
Height (rail to roof)	3 937 mm	12' 11"
Doorway width (End side door - Low level)	1 219 mm	48"
(End side door - High and Low)	914 mm	36"
(Center side door)	1 270 mm	50"
Coupler height above rail	876 mm	34-1/2"
Wheel diameter (new)	864 mm	34"
Truck wheel base	2 642 mm	8' 8"
Truck centers	18 136 mm	59' 6"
Track gauge	1 435 mm	4' 8-1/2"
Floor height above rail	1 295 mm	51"
Minimum height floor to high ceiling	2 159 mm	7' 1"

Weight and Capacity

	Metric	Imperial
Car weight (AW0)	57 834 kg	127,500 lbs
Car capacity	78 to 92 for 2x2 seating	94 to 113 for 3x2 seating

SOURCES AND USES OF FUNDS

Sources and Uses of Funds

Alternative 1A: Stand Alone Service with Pawtucket Layover

1998 Dollars

Item/Year	Total	0 1999	1 2000	11 2010	25 2024	26 2025
Sources of Funds						
Fare Revenue	\$ 86,641,300	NA	\$ 3,180,391	\$ 3,363,098	\$ 3,885,792	\$ 3,904,451
Non-Fare Revenue						
Parking	\$ 12,516,171	NA	\$ 458,549	\$ 485,832	\$ 558,451	\$ 564,035
Advertising Revenues	\$ 1,714,780	NA	\$ 68,591	\$ 68,591	\$ 68,591	\$ 68,591
State Funds						
Bonds Proceeds	\$ 38,202,080	\$ 38,202,080				
State Assistance	\$ 170,000,000		\$ 6,800,000	\$ 6,800,000	\$ 6,800,000	\$ 6,800,000
Federal Funds						
Federal Grants		\$ 18,447,000				
Total Sources	\$ 309,074,311	\$ 56,649,060	\$ 10,485,531	\$ 10,717,519	\$ 11,292,834	\$ 11,337,078
Uses of Funds						
Capital						
Wickford Junction Station	\$ 13,000,000	\$ 13,000,000				
Warwick/Hillsgrove Station	\$ -	\$ -				
Kingston Station	\$ 1,000,000	\$ 1,000,000				
Westerly Station	\$ 1,000,000	\$ 1,000,000				
Layover Facility	\$ -	\$ -				
Layup Track	\$ -	\$ -				
Blind Coach	\$ 20,900,000	\$ 20,900,000				
Control Coach	\$ 8,800,000	\$ 8,800,000				
Locomotive	\$ 11,200,000	\$ 11,200,000				
Subtotal	\$ 55,900,000	\$ 55,900,000				
Operation & Maintenance						
Trackage Use Fee	\$ 52,544,608		\$ 2,020,946	\$ 2,020,946	\$ 2,020,946	\$ 2,020,946
Transportation Costs (Train & Engine)	\$ 53,842,265		\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164
Service Support Staff	\$ 28,645,360		\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745
Mechanical Costs (Staff & Purchased Services)	\$ 7,694,466		\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941
Equipment Maintenance Materials	\$ 21,739,328		\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128
Shared Equipment Costs	\$ -		\$ -	\$ -	\$ -	\$ -
Fuel Costs	\$ 13,291,127		\$ 511,197	\$ 511,197	\$ 511,197	\$ 511,197
Station Maintenance	\$ 780,000		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Subtotal	\$ 178,337,153		\$ 6,859,121	\$ 6,859,121	\$ 6,859,121	\$ 6,859,121
Debt Service						
Principal Repayment	\$ 37,453,000		\$ 732,182	\$ 1,250,672	\$ 2,646,537	\$ -
Interest Expense	\$ 32,349,423		\$ 2,059,915	\$ 1,541,424	\$ 145,560	\$ -
Financing Fees (2% of principal)	\$ -	\$ 749,080				
Subtotal	\$ 69,802,423	\$ 749,080	\$ 2,792,097	\$ 2,792,097	\$ 2,792,097	\$ -
Total Uses	\$ 248,139,576	\$ 56,649,060	\$ 9,651,218	\$ 9,651,218	\$ 9,651,218	\$ 6,859,121
Project Rate of Return						
Earnings before Debt Service Expense						
Less: Project Costs	\$ (56,649,060)					
Plus: Residual Value (5% of Capital Investment)					\$ 2,795,000	
Net Flow	\$ (56,649,060)		\$ (3,173,590)	\$ (2,941,602)	\$ (2,366,287)	\$ (2,322,044)
Subvention Payment (Required for 15% Rate of Return)			\$ 11,750,000	\$ 11,750,000	\$ 11,750,000	\$ 11,750,000
Modified Net Flow	\$ (56,649,060)		\$ 8,576,410	\$ 8,808,398	\$ 9,383,713	\$ 12,222,956
Debt Service Coverage						
Cashflow Available for Debt Service			\$ 3,828,410	\$ 3,858,398	\$ 4,433,713	\$ 4,477,956
Total Debt Service			\$ 2,792,097	\$ 2,792,097	\$ 2,792,097	
Debt Service Coverage Ratio	1.30		1.30	1.38	1.59	

Pro Forma Income Statement

Alternative 1A: Stand Alone Service with Pawtucket Layover

1998 Dollars		1	6	11	16	21	26
Item/Year		2000	2005	2010	2015	2020	2025
Revenues	Revenues						
	Fare Revenue	\$ 3,160,391	\$ 3,280,469	\$ 3,363,096	\$ 3,534,848	\$ 3,714,951	\$ 3,904,451
	Parking	\$ 456,549	\$ 471,006	\$ 485,832	\$ 510,614	\$ 538,680	\$ 564,035
	Advertising Revenues (1% of Operating Expenses)	\$ 68,591	\$ 68,591	\$ 68,591	\$ 68,591	\$ 68,591	\$ 68,591
	Total Revenues	\$ 3,685,531	\$ 3,800,066	\$ 3,917,519	\$ 4,113,853	\$ 4,320,203	\$ 4,537,078
Expenses	Operating Costs						
	Trackage Use Fee	\$ 2,020,946	\$ 2,020,946	\$ 2,020,946	\$ 2,020,946	\$ 2,020,946	\$ 2,020,946
	Transportation Costs (Train & Engine)	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164
	Service Support Staff	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745
	Mechanical Costs (Staff & Purchased Services)	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941
	Equipment Maintenance Materials	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128
	Shared Equipment Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Fuel Costs	\$ 511,197	\$ 511,197	\$ 511,197	\$ 511,197	\$ 511,197	\$ 511,197
	Station Maintenance	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
	Total Operating Costs	\$ 6,859,121	\$ 6,859,121	\$ 6,859,121	\$ 6,859,121	\$ 6,859,121	\$ 6,859,121
	Earnings Before Debt Service Expense	\$ (3,173,590)	\$ (3,059,055)	\$ (2,941,602)	\$ (2,745,268)	\$ (2,538,919)	\$ (2,322,044)
	Debt Service						
	Principal Repayment	\$ 732,182	\$ 958,932	\$ 1,250,672	\$ 1,634,579	\$ 2,136,329	\$ -
	Interest Expense	\$ 2,059,915	\$ 1,835,164	\$ 1,541,424	\$ 1,157,518	\$ 655,768	\$ -
	Total Debt Service	\$ 2,792,097	\$ 2,792,097	\$ 2,792,097	\$ 2,792,097	\$ 2,792,097	\$ -
	Total Current Expenses	\$ 9,651,218	\$ 9,651,218	\$ 9,651,218	\$ 9,651,218	\$ 9,651,218	\$ 6,859,121
Net Income	Net Income / (Cost of Service in Excess of Net Income)	\$ (5,965,687)	\$ (5,851,152)	\$ (5,733,699)	\$ (5,537,365)	\$ (5,331,016)	\$ (2,322,044)
	State Operating Assistance	\$ 6,800,000	\$ 6,800,000	\$ 6,800,000	\$ 6,800,000	\$ 6,800,000	\$ 6,800,000
	Farebox Recovery (% of Operating Costs)	Min. = 48%	48%	48%	49%	52%	54%
	Farebox Recovery (% of Total Current Expenses)	Min. = 33%	33%	34%	35%	37%	38%

Sources and Uses of Funds

Alternative 1B: Stand Alone Service with Westerly Layover

1998 Dollars		0	1	11	25	26
Item/Year	Total	1999	2000	2010	2024	2025
Sources of Funds						
Fare Revenue	\$ 86,641,300	NA	\$ 3,160,391	\$ 3,363,096	\$ 3,865,792	\$ 3,904,451
Non-Fare Revenue						
Parking	\$ 12,516,171	NA	\$ 456,549	\$ 485,832	\$ 558,451	\$ 564,035
Advertising Revenues	\$ 1,519,039	NA	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762
State Funds						
Bonds Proceeds	\$ 41,824,080	\$ 41,824,080				
State Assistance	\$ 161,250,000		\$ 6,450,000	\$ 6,450,000	\$ 6,450,000	\$ 6,450,000
Federal Funds						
Federal Grants		\$ 20,196,000				
Total Sources	\$ 303,750,590	\$ 62,020,080	\$ 10,127,702	\$ 10,359,689	\$ 10,935,005	\$ 10,979,248
Uses of Funds						
Capital						
Wickford Junction Station	\$ 13,000,000	\$ 13,000,000				
Warwick/Hillsgrove Station	\$ -	\$ -				
Kingston Station	\$ 1,000,000	\$ 1,000,000				
Westerly Station	\$ 1,000,000	\$ 1,000,000				
Layover Facility	\$ 5,000,000	\$ 5,000,000				
Layup Track	\$ 300,000	\$ 300,000				
Blind Coach	\$ 20,900,000	\$ 20,900,000				
Control Coach	\$ 8,800,000	\$ 8,800,000				
Locomotive	\$ 11,200,000	\$ 11,200,000				
Subtotal	\$ 61,200,000	\$ 61,200,000				
Operation & Maintenance						
Trackage Use Fee	\$ 36,297,261		\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049
Transportation Costs (Train & Engine)	\$ 53,642,265		\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164
Service Support Staff	\$ 28,645,360		\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745
Mechanical Costs (Staff & Purchased Services)	\$ 7,694,466		\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941
Equipment Maintenance Materials	\$ 21,739,328		\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128
Shared Equipment Costs	\$ -		\$ -	\$ -	\$ -	\$ -
Fuel Costs	\$ 9,181,371		\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130
Station Maintenance	\$ 780,000		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Subtotal	\$ 157,980,051		\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156
Debt Service						
Principal Repayment	\$ 41,824,080		\$ 817,634	\$ 1,396,636	\$ 2,955,411	-
Interest Expense	\$ 36,124,873		\$ 2,300,324	\$ 1,721,322	\$ 162,548	-
Financing Fees (2% of principal)	\$ -	\$ 820,080				
Subtotal	\$ 77,948,953	\$ 820,080	\$ 3,117,958	\$ 3,117,958	\$ 3,117,958	-
Total Uses	\$ 235,929,003	\$ 62,020,080	\$ 9,194,114	\$ 9,194,114	\$ 9,194,114	\$ 6,076,156
Project Rate of Return						
Earnings before Debt Service Expense						
Less: Project Costs	\$ (62,020,080)					
Plus: Residual Value (5% of Capital Investment)						\$ 3,060,000
Net Flow						
IRR N/A	\$ (62,020,080)	\$ (3,173,590)	\$ (2,941,602)	\$ (2,366,287)	\$ (2,322,044)	
Subvention Payment (Required for 15% Rate of Return)			\$ 12,550,000	\$ 12,550,000	\$ 12,550,000	\$ 12,550,000
Modified Net Flow						
IRR= 15.0%	\$ (62,020,080)	\$ 9,376,410	\$ 9,608,398	\$ 10,183,713	\$ 13,287,958	
Debt Service Coverage						
Cashflow Available for Debt Service			\$ 4,051,546	\$ 4,283,533	\$ 4,858,849	\$ 4,903,092
Total Debt Service			\$ 3,117,958	\$ 3,117,958	\$ 3,117,958	
Debt Service Coverage Ratio	1.30		1.30	1.37	1.56	

Pro Forma Income Statement

Alternative 1B: Stand Alone Service with Westerly Layover

1998 Dollars

Item/Year		1	6	11	16	25	26
		2000	2005	2010	2015	2024	2025
Revenues	Revenues						
	Fare Revenue	\$ 3,160,391	\$ 3,260,469	\$ 3,363,096	\$ 3,534,648	\$ 3,865,792	\$ 3,904,451
	Parking	\$ 458,549	\$ 471,006	\$ 485,832	\$ 510,614	\$ 558,451	\$ 564,035
	Advertising Revenues (1% of Operating Expenses)	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762
	Total Revenues	\$ 3,677,702	\$ 3,792,237	\$ 3,909,689	\$ 4,106,024	\$ 4,485,005	\$ 4,529,248
Expenses	Operating Costs						
	Trackage Use Fee	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049
	Transportation Costs (Train & Engine)	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164
	Service Support Staff	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745
	Mechanical Costs (Staff & Purchased Services)	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941
	Equipment Maintenance Materials	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128
	Shared Equipment Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Fuel Costs	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130
	Station Maintenance	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
	Total Operating Costs	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156
	Earnings Before Debt Service Expense	\$ (2,398,454)	\$ (2,283,919)	\$ (2,166,467)	\$ (1,970,132)	\$ (1,591,151)	\$ (1,546,908)
	Debt Service						
	Principal Repayment	\$ 817,634	\$ 1,068,615	\$ 1,396,636	\$ 1,825,348	\$ 2,955,411	\$ -
	Interest Expense	\$ 2,300,324	\$ 2,049,344	\$ 1,721,322	\$ 1,292,610	\$ 162,548	\$ -
	Total Debt Service	\$ 3,117,958	\$ 3,117,958	\$ 3,117,958	\$ 3,117,958	\$ 3,117,958	\$ -
	Total Current Expenses	\$ 9,194,114	\$ 9,194,114	\$ 9,194,114	\$ 9,194,114	\$ 9,194,114	\$ 6,076,156
Net Income	Net Income / (Cost of Service in Excess of Net Income)	\$ (5,516,412)	\$ (5,401,877)	\$ (5,284,425)	\$ (5,088,090)	\$ (4,709,109)	\$ (1,546,908)
	State Operating Assistance	\$ 6,450,000	\$ 6,450,000	\$ 6,450,000	\$ 6,450,000	\$ 6,450,000	\$ 6,450,000
	Farebox Recovery (% of Operating Costs)	Min. = 52%	52%	54%	55%	58%	64%
	Farebox Recovery (% of Total Current Expenses)	Min. = 34%	34%	35%	37%	38%	64%

Sources and Uses of Funds

Alternative 1B: Stand Alone Service with Westerly Layover

Toll Revenue Credit

1998 Dollars

Item/Year	Total	0 1999	1 2000	11 2010	21 2020	25 2024	26 2025
Sources of Funds							
Fare Revenue	\$ 86,641,300	NA	\$ 3,160,391	\$ 3,363,096	\$ 3,714,951	\$ 3,885,792	\$ 3,904,451
Non-Fare Revenue							
Parking	\$ 12,516,171	NA	\$ 456,549	\$ 485,832	\$ 536,660	\$ 558,451	\$ 564,035
Advertising Revenues	\$ 1,519,039	NA	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762
State Funds							
Bonds Proceeds	\$ 31,824,080	\$ 31,824,080					
State Assistance	\$ 136,375,000	\$ 5,455,000	\$ 5,455,000	\$ 5,455,000	\$ 5,455,000	\$ 5,455,000	\$ 5,455,000
Toll Revenue Credit		\$10,000,000					
Federal Funds							
Federal Grants		\$ 20,196,000					
Total Sources	\$ 268,675,590	\$ 61,820,080	\$ 9,132,702	\$ 9,364,689	\$ 9,767,373	\$ 9,940,005	\$ 9,984,248
Uses of Funds							
Capital							
Wickford Junction Station	\$ 13,000,000	\$ 13,000,000					
Warwick/Hillsgrove Station	\$ -	\$ -					
Kingston Station	\$ 1,000,000	\$ 1,000,000					
Westerly Station	\$ 1,000,000	\$ 1,000,000					
Layover Facility	\$ 5,000,000	\$ 5,000,000					
Layup Track	\$ 300,000	\$ 300,000					
Blind Coach	\$ 20,900,000	\$ 20,900,000					
Control Coach	\$ 8,800,000	\$ 8,800,000					
Locomotive	\$ 11,200,000	\$ 11,200,000					
Subtotal	\$ 61,200,000	\$ 61,200,000					
Operation & Maintenance							
Trackage Use Fee	\$ 36,297,261		\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049
Transportation Costs (Train & Engine)	\$ 53,642,265		\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164
Service Support Staff	\$ 28,645,360		\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745
Mechanical Costs (Staff & Purchased Services)	\$ 7,694,486		\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941
Equipment Maintenance Materials	\$ 21,739,328		\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128
Shared Equipment Costs	\$ -		\$ -	\$ -	\$ -	\$ -	\$ -
Fuel Costs	\$ 9,181,371		\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130
Station Maintenance	\$ 780,000		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Subtotal	\$ 157,980,051		\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156
Debt Service							
Principal Repayment	\$ 31,624,080		\$ 618,230	\$ 1,056,027	\$ 1,803,846	\$ 2,234,649	\$ -
Interest Expense	\$ 27,314,788		\$ 1,739,324	\$ 1,301,528	\$ 553,709	\$ 122,906	\$ -
Financing Fees (2% of principal)	\$ -	\$ 620,080					
Subtotal	\$ 58,938,868	\$ 620,080	\$ 2,357,555	\$ 2,357,555	\$ 2,357,555	\$ 2,357,555	\$ -
Total Uses	\$ 218,918,918	\$ 61,820,080	\$ 8,433,711	\$ 8,433,711	\$ 8,433,711	\$ 8,433,711	\$ 6,076,156
Project Rate of Return							
Earnings before Debt Service Expense							
Less: Project Costs		\$ (61,820,080)					
Plus: Residual Value (5% of Capital Investment)							\$ 3,060,000
Net Flow	IRR N/A	\$ (61,820,080)	\$ (3,173,590)	\$ (2,941,602)	\$ (2,538,919)	\$ (2,366,267)	\$ (2,322,044)
Subvention Payment (Required for 15% Rate of Return)			\$ 12,550,000	\$ 12,550,000	\$ 12,550,000	\$ 12,550,000	\$ 12,550,000
Modified Net Flow	IRR= 15.0%	\$ (61,820,080)	\$ 9,376,410	\$ 9,608,398	\$ 10,011,081	\$ 10,183,713	\$ 13,267,956
Debt Service Coverage							
Cashflow Available for Debt Service		\$ 3,056,546	\$ 3,288,533	\$ 3,691,217	\$ 3,863,849	\$ 3,908,082	
Total Debt Service		\$ 2,357,555	\$ 2,357,555	\$ 2,357,555	\$ 2,357,555		
Debt Service Coverage Ratio	1.30		1.30	1.39	1.57	1.64	

Pro Forma Income Statement

Alternative 1B: Stand Alone Service with Westerly Layover

Toll Revenue Credit

1998 Dollars		1	6	11	16	25	26
Item/Year		2000	2005	2010	2015	2024	2025
Revenues	Revenues						
	Fare Revenue	\$ 3,160,391	\$ 3,260,469	\$ 3,363,096	\$ 3,534,848	\$ 3,865,792	\$ 3,904,451
	Parking	\$ 456,549	\$ 471,006	\$ 485,832	\$ 510,614	\$ 558,451	\$ 564,035
	Advertising Revenues (1% of Operating Expenses)	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762
	Total Revenues	\$ 3,677,702	\$ 3,792,237	\$ 3,909,689	\$ 4,106,024	\$ 4,485,005	\$ 4,529,248
Expenses	Operating Costs						
	Trackage Use Fee	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049
	Transportation Costs (Train & Engine)	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164
	Service Support Staff	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745
	Mechanical Costs (Staff & Purchased Services)	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941
	Equipment Maintenance Materials	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128
	Shared Equipment Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Fuel Costs	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130
	Station Maintenance	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
	Total Operating Costs	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156
	Earnings Before Debt Service Expense	\$ (2,398,454)	\$ (2,283,919)	\$ (2,166,467)	\$ (1,970,132)	\$ (1,591,151)	\$ (1,546,908)
	Debt Service						
	Principal Repayment	\$ 618,230	\$ 808,002	\$ 1,056,027	\$ 1,380,185	\$ 2,234,649	\$ -
	Interest Expense	\$ 1,739,324	\$ 1,549,552	\$ 1,301,528	\$ 977,370	\$ 162,548	\$ -
	Total Debt Service	\$ 2,357,555	\$ 2,357,555	\$ 2,357,555	\$ 2,357,555	\$ 2,397,197	\$ -
	Total Current Expenses	\$ 8,433,711	\$ 8,433,711	\$ 8,433,711	\$ 8,433,711	\$ 8,473,352	\$ 6,076,156
Net Income	Net Income / (Cost of Service in Excess of Net Income)	\$ (4,756,009)	\$ (4,641,474)	\$ (4,524,021)	\$ (4,327,687)	\$ (3,988,348)	\$ (1,546,908)
	State Operating Assistance	\$ 5,455,000	\$ 5,455,000	\$ 5,455,000	\$ 5,455,000	\$ 5,455,000	\$ 5,455,000
	Farebox Recovery (% of Operating Costs)	Min. = 52%	52%	54%	55%	58%	64%
	Farebox Recovery (% of Total Current Expenses)	Min. = 35%	37%	39%	40%	42%	64%

Sources and Uses of Funds

Alternative 1B: Stand Alone Service with Westerly Layover

50% Federal Grant

1998 Dollars

Item/Year	Total	0 1999	1 2000	11 2010	21 2020	25 2024	26 2025
Sources of Funds							
Fare Revenue	\$ 86,641,300	NA	\$ 3,180,391	\$ 3,363,098	\$ 3,714,951	\$ 3,885,792	\$ 3,904,451
Non-Fare Revenue							
Parking	\$ 12,516,171	NA	\$ 456,549	\$ 485,832	\$ 536,860	\$ 558,451	\$ 564,035
Advertising Revenues	\$ 1,519,039	NA	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762	\$ 60,762
State Funds							
Bonds Proceeds	\$ 31,212,000	\$ 31,212,000					
State Assistance	\$ 135,500,000		\$ 5,420,000	\$ 5,420,000	\$ 5,420,000	\$ 5,420,000	\$ 5,420,000
Federal Funds							
Federal Grants		\$ 30,600,000					
Total Sources	\$ 267,388,510	\$ 61,812,000	\$ 9,097,702	\$ 9,329,689	\$ 9,732,373	\$ 9,905,005	\$ 9,949,248
Uses of Funds							
Capital							
Wickford Junction Station	\$ 13,000,000	\$ 13,000,000					
Warwick/Hillsgrove Station	\$ -	\$ -					
Kingston Station	\$ 1,000,000	\$ 1,000,000					
Westerly Station	\$ 1,000,000	\$ 1,000,000					
Layover Facility	\$ 5,000,000	\$ 5,000,000					
Layup Track	\$ 300,000	\$ 300,000					
Blind Coach	\$ 20,900,000	\$ 20,900,000					
Control Coach	\$ 8,800,000	\$ 8,800,000					
Locomotive	\$ 11,200,000	\$ 11,200,000					
Subtotal	\$ 61,200,000	\$ 61,200,000					
Operation & Maintenance							
Trackage Use Fee	\$ 36,297,261		\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049
Transportation Costs (Train & Engine)	\$ 53,842,265		\$ 2,063,184	\$ 2,063,184	\$ 2,063,184	\$ 2,063,184	\$ 2,063,184
Service Support Staff	\$ 28,645,360		\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745
Mechanical Costs (Staff & Purchased Services)	\$ 7,894,486		\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941
Equipment Maintenance Materials	\$ 21,739,328		\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128
Shared Equipment Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Fuel Costs	\$ 9,181,371		\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130
Station Maintenance	\$ 780,000		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Subtotal	\$ 157,980,051		\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156	\$ 6,076,156
Debt Service							
Principal Repayment	\$ 31,212,000		\$ 610,174	\$ 1,042,266	\$ 1,780,341	\$ 2,205,530	\$ -
Interest Expense	\$ 26,958,860		\$ 1,716,660	\$ 1,284,568	\$ 546,493	\$ 121,304	\$ -
Financing Fees (2% of principal)	\$ -	\$ 612,000					
Subtotal	\$ 58,170,860	\$ 612,000	\$ 2,326,834	\$ 2,326,834	\$ 2,326,834	\$ 2,326,834	\$ -
Total Uses	\$ 216,150,911	\$ 61,812,000	\$ 8,402,990	\$ 8,402,990	\$ 8,402,990	\$ 8,402,990	\$ 6,076,156
Project Rate of Return							
Earnings before Debt Service Expense							
Less: Project Costs		\$ (61,812,000)					
Plus: Residual Value (5% of Capital Investment)							\$ 3,060,000
Net Flow	IRR N/A	\$ (61,812,000)	\$ (3,173,590)	\$ (2,941,802)	\$ (2,538,919)	\$ (2,366,287)	\$ (2,322,044)
Subvention Payment (Required for 15% Rate of Return)			\$ 12,550,000	\$ 12,550,000	\$ 12,550,000	\$ 12,550,000	\$ 12,550,000
Modified Net Flow	IRR= 15.0%	\$ (61,812,000)	\$ 9,376,410	\$ 9,608,398	\$ 10,011,081	\$ 10,183,713	\$ 13,287,956
Debt Service Coverage							
Cashflow Available for Debt Service			\$ 3,021,546	\$ 3,253,533	\$ 3,656,217	\$ 3,826,849	\$ 3,873,092
Total Debt Service			\$ 2,326,834	\$ 2,326,834	\$ 2,326,834	\$ 2,326,834	
Debt Service Coverage Ratio	1.30		1.30	1.40	1.57	1.65	

Pro Forma Income Statement

Alternative 1B: Stand Alone Service with Westerly Layover

50% Federal Grant

1998 Dollars		1	6	11	16	25	26
Item/Year		2000	2005	2010	2015	2024	2025
Revenues	Revenues						
	Fare Revenue	\$ 3,180,391	\$ 3,260,489	\$ 3,383,098	\$ 3,534,848	\$ 3,865,792	\$ 3,904,451
	Parking	\$ 456,549	\$ 471,006	\$ 485,832	\$ 510,814	\$ 558,451	\$ 564,035
	Advertising Revenues (1% of Operating Expenses)	\$ 60,782	\$ 60,782	\$ 60,782	\$ 60,782	\$ 60,782	\$ 60,782
	Total Revenues	\$ 3,697,722	\$ 3,792,237	\$ 3,909,689	\$ 4,106,024	\$ 4,485,005	\$ 4,529,248
Expenses	Operating Costs						
	Trackage Use Fee	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049	\$ 1,396,049
	Transportation Costs (Train & Engine)	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164	\$ 2,063,164
	Service Support Staff	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745	\$ 1,101,745
	Mechanical Costs (Staff & Purchased Services)	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941	\$ 295,941
	Equipment Maintenance Materials	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128	\$ 836,128
	Shared Equipment Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Fuel Costs	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130	\$ 353,130
	Station Maintenance	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
	Total Operating Costs	\$ 6,078,156	\$ 6,078,156	\$ 6,078,156	\$ 6,078,156	\$ 6,078,156	\$ 6,078,156
	Earnings Before Debt Service Expense	\$ (2,380,434)	\$ (2,285,919)	\$ (2,168,467)	\$ (1,972,132)	\$ (1,593,151)	\$ (1,548,908)
	Debt Service						
	Principal Repayment	\$ 610,174	\$ 797,474	\$ 1,042,266	\$ 1,362,200	\$ 2,205,530	\$ -
	Interest Expense	\$ 1,718,660	\$ 1,529,361	\$ 1,284,588	\$ 964,634	\$ 121,304	\$ -
	Total Debt Service	\$ 2,328,834	\$ 2,326,834	\$ 2,326,834	\$ 2,326,834	\$ 2,326,834	\$ -
	Total Current Expenses	\$ 8,406,990	\$ 8,402,990	\$ 8,402,990	\$ 8,402,990	\$ 8,402,990	\$ 6,078,156
Net Income	Net Income / (Cost of Service in Excess of Net Income)	\$ (4,725,288)	\$ (4,610,753)	\$ (4,493,301)	\$ (4,296,967)	\$ (3,917,986)	\$ (1,548,908)
	State Operating Assistance	\$ 5,420,000	\$ 5,420,000	\$ 5,420,000	\$ 5,420,000	\$ 5,420,000	\$ 5,420,000
	Farebox Recovery (% of Operating Costs)	Min. = 52%	52%	54%	55%	58%	64%
	Farebox Recovery (% of Total Current Expenses)	Min. = 38%	38%	39%	40%	42%	64%

Sources and Uses of Funds

Alternative 2: ConnDOT Service Extension with Westerly Layover

1998 Dollars						
Item/Year	Total	0 1999	1 2000	11 2010	25 2024	26 2025
Sources of Funds						
Fare Revenue	\$ 86,641,300	NA	\$ 3,160,391	\$ 3,363,096	\$ 3,865,792	\$ 3,904,451
Non-Fare Revenue						
Parking	\$ 12,518,171	NA	\$ 456,549	\$ 485,832	\$ 558,451	\$ 564,035
Advertising Revenues	\$ 1,418,751	NA	\$ 56,750	\$ 56,750	\$ 56,750	\$ 56,750
State Funds						
Bonds Proceeds	\$ 52,553,460	\$ 52,553,460				
State Assistance	\$ 177,500,000		\$ 7,100,000	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000
Federal Funds						
Federal Grants		\$ 25,377,000				
Total Sources	\$ 330,629,682	\$ 77,930,460	\$ 10,773,690	\$ 11,005,678	\$ 11,580,993	\$ 11,625,237
Uses of Funds						
Capital						
Wickford Junction Station	\$ 13,000,000	\$ 13,000,000				
Warwick/Hillsgrove Station	\$ -	\$ -				
Kingston Station	\$ 1,000,000	\$ 1,000,000				
Westerly Station	\$ 1,000,000	\$ 1,000,000				
Layover Facility	\$ 5,000,000	\$ 5,000,000				
Layup Track	\$ 300,000	\$ 300,000				
Blind Coach	\$ 26,600,000	\$ 26,600,000				
Control Coach	\$ 13,200,000	\$ 13,200,000				
Locomotive	\$ 16,800,000	\$ 16,800,000				
Subtotal	\$ 76,900,000	\$ 76,900,000				
Operation & Maintenance						
Trackage Use Fee	\$ 36,592,519		\$ 1,407,405	\$ 1,407,405	\$ 1,407,405	\$ 1,407,405
Transportation Costs (Train & Engine)	\$ 51,104,101		\$ 1,965,542	\$ 1,965,542	\$ 1,965,542	\$ 1,965,542
Service Support Staff	\$ 16,018,297		\$ 616,088	\$ 616,088	\$ 616,088	\$ 616,088
Mechanical Costs (Staff & Purchased Services)	\$ 5,770,849		\$ 221,956	\$ 221,956	\$ 221,956	\$ 221,956
Equipment Maintenance Materials	\$ 25,217,400		\$ 969,900	\$ 969,900	\$ 969,900	\$ 969,900
Shared Equipment Costs	\$ -		\$ -	\$ -	\$ -	\$ -
Fuel Costs	\$ 12,066,945		\$ 464,113	\$ 464,113	\$ 464,113	\$ 464,113
Station Maintenance	\$ 780,000		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Subtotal	\$ 147,550,111		\$ 5,675,004	\$ 5,675,004	\$ 5,675,004	\$ 5,675,004
Debt Service						
Principal Repayment	\$ 52,553,460		\$ 1,027,386	\$ 1,754,924	\$ 3,713,580	-
Interest Expense	\$ 45,392,201		\$ 2,890,440	\$ 2,162,902	\$ 204,247	-
Financing Fees (2% of principal)	\$ -	\$ 1,030,460				
Subtotal	\$ 97,945,661	\$ 1,030,460	\$ 3,917,826	\$ 3,917,826	\$ 3,917,826	\$ -
Total Uses	\$ 245,495,772	\$ 77,930,460	\$ 9,592,831	\$ 9,592,831	\$ 9,592,831	\$ 5,675,004
Project Rate of Return						
Earnings before Debt Service Expense						
Less: Project Costs		\$ (77,930,460)				
Plus: Residual Value (5% of Capital Investment)						\$ 3,845,000
Net Flow	IRR N/A	\$ (77,930,460)	\$ (3,173,590)	\$ (2,941,602)	\$ (2,366,287)	\$ (2,322,044)
Subvention Payment (Required for 15% Rate of Return)			\$ 15,000,000	\$ 15,000,000	\$ 15,000,000	\$ 15,000,000
Modified Net Flow	IRR= 15.0%	\$ (77,930,460)	\$ 11,826,410	\$ 12,058,398	\$ 12,633,713	\$ 16,522,956
Debt Service Coverage						
Cashflow Available for Debt Service			\$ 5,098,686	\$ 5,330,673	\$ 5,905,989	\$ 5,950,232
Total Debt Service			\$ 3,917,826	\$ 3,917,826	\$ 3,917,826	
Debt Service Coverage Ratio	1.30		1.30	1.36	1.51	

Pro Forma Income Statement

Alternative 2: ConnDOT Service Extension with Westerly Layover

1998 Dollars		1	6	11	16	25	26
Item/Year		2000	2005	2010	2015	2024	2025
Revenues	Revenues						
	Fare Revenue	\$ 3,180,391	\$ 3,280,469	\$ 3,383,096	\$ 3,534,648	\$ 3,885,792	\$ 3,904,451
	Parking	\$ 456,549	\$ 471,006	\$ 485,832	\$ 510,614	\$ 558,451	\$ 584,035
	Advertising Revenues (1% of Operating Expenses)	\$ 58,750	\$ 58,750	\$ 58,750	\$ 58,750	\$ 58,750	\$ 58,750
	Total Revenues	\$ 3,673,690	\$ 3,788,225	\$ 3,905,678	\$ 4,102,012	\$ 4,480,993	\$ 4,525,237
Expenses	Operating Costs						
	Trackage Use Fee	\$ 1,407,405	\$ 1,407,405	\$ 1,407,405	\$ 1,407,405	\$ 1,407,405	\$ 1,407,405
	Transportation Costs (Train & Engine)	\$ 1,965,542	\$ 1,965,542	\$ 1,965,542	\$ 1,965,542	\$ 1,965,542	\$ 1,965,542
	Service Support Staff	\$ 616,088	\$ 616,088	\$ 616,088	\$ 616,088	\$ 616,088	\$ 616,088
	Mechanical Costs (Staff & Purchased Services)	\$ 221,956	\$ 221,956	\$ 221,956	\$ 221,956	\$ 221,956	\$ 221,956
	Equipment Maintenance Materials	\$ 969,900	\$ 969,900	\$ 969,900	\$ 969,900	\$ 969,900	\$ 969,900
	Shared Equipment Costs	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	Fuel Costs	\$ 464,113	\$ 464,113	\$ 464,113	\$ 464,113	\$ 464,113	\$ 464,113
	Station Maintenance	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
	Total Operating Costs	\$ 5,675,004	\$ 5,675,004	\$ 5,675,004	\$ 5,675,004	\$ 5,675,004	\$ 5,675,004
	Earnings Before Debt Service Expense	\$ (2,001,314)	\$ (1,886,779)	\$ (1,769,327)	\$ (1,572,992)	\$ (1,194,011)	\$ (1,149,768)
	Debt Service						
	Principal Repayment	\$ 1,027,386	\$ 1,342,753	\$ 1,754,924	\$ 2,293,615	\$ 3,713,580	\$ -
	Interest Expense	\$ 2,890,440	\$ 2,575,074	\$ 2,162,902	\$ 1,624,211	\$ 204,247	\$ -
	Total Debt Service	\$ 3,917,826	\$ 3,917,826	\$ 3,917,826	\$ 3,917,826	\$ 3,917,826	\$ -
	Total Current Expenses	\$ 9,592,831	\$ 9,592,831	\$ 9,592,831	\$ 9,592,831	\$ 9,592,831	\$ 5,675,004
Net Income	Net Income / (Cost of Service in Excess of Net Income)	\$ (5,919,140)	\$ (5,804,605)	\$ (5,687,153)	\$ (5,490,819)	\$ (5,111,838)	\$ (1,149,768)
	State Operating Assistance	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000	\$ 7,100,000
	Farebox Recovery (% of Operating Costs)	Min. = 56%	56%	57%	59%	62%	68%
	Farebox Recovery (% of Total Current Expenses)	Min. = 33%	33%	34%	35%	37%	69%

Sources and Uses of Funds

Alternative 3: MBTA Service Extension with Pawtucket Layover

1998 Dollars		0	1	11	25	26
Item/Year	Total	1999	2000	2010	2024	2025
Sources of Funds						
Fare Revenue	\$ 86,641,300	NA	\$ 3,160,391	\$ 3,363,096	\$ 3,865,792	\$ 3,904,451
Non-Fare Revenue						
Parking	\$ 12,516,171	NA	\$ 456,549	\$ 485,832	\$ 558,451	\$ 564,035
Advertising Revenues	\$ 1,889,144	NA	\$ 75,566	\$ 75,566	\$ 75,566	\$ 75,566
State Funds						
Bonds Proceeds	\$ 32,461,500	\$ 32,461,500				
State Assistance	\$ 173,750,000		\$ 6,950,000	\$ 6,950,000	\$ 6,950,000	\$ 6,950,000
Federal Funds						
Federal Grants		\$ 15,675,000				
Total Sources	\$ 307,258,115	\$ 48,136,500	\$ 10,642,506	\$ 10,874,493	\$ 11,449,809	\$ 11,494,052
Uses of Funds						
Capital						
Wickford Junction Station	\$ 13,000,000	\$ 13,000,000				
Warwick/Hillsgrove Station	\$ -	\$ -				
Kingston Station	\$ 1,000,000	\$ 1,000,000				
Westerly Station	\$ 1,000,000	\$ 1,000,000				
Layover Facility	\$ -	\$ -				
Layup Track	\$ -	\$ -				
Blind Coach	\$ 24,700,000	\$ 24,700,000				
Control Coach	\$ 2,200,000	\$ 2,200,000				
Locomotive	\$ 5,600,000	\$ 5,600,000				
Subtotal	\$ 47,500,000	\$ 47,500,000				
Operation & Maintenance						
Trackage Use Fee	\$ 56,347,177		\$ 2,167,199	\$ 2,167,199	\$ 2,167,199	\$ 2,167,199
Transportation Costs (Train & Engine)	\$ 68,697,913		\$ 2,642,227	\$ 2,642,227	\$ 2,642,227	\$ 2,642,227
Service Support Staff	\$ 6,526,004		\$ 251,000	\$ 251,000	\$ 251,000	\$ 251,000
Mechanical Costs (Staff & Purchased Services)	\$ 5,770,849		\$ 221,956	\$ 221,956	\$ 221,956	\$ 221,956
Equipment Maintenance Materials	\$ 26,733,200		\$ 1,028,200	\$ 1,028,200	\$ 1,028,200	\$ 1,028,200
Shared Equipment Costs	\$ 17,362,800		\$ 667,800	\$ 667,800	\$ 667,800	\$ 667,800
Fuel Costs	\$ 14,252,985		\$ 548,192	\$ 548,192	\$ 548,192	\$ 548,192
Station Maintenance	\$ 780,000		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Subtotal	\$ 196,470,929		\$ 7,556,574	\$ 7,556,574	\$ 7,556,574	\$ 7,556,574
Debt Service						
Principal Repayment	\$ 31,825,000		\$ 622,158	\$ 1,062,736	\$ 2,248,847	\$ -
Interest Expense	\$ 27,488,329		\$ 1,750,375	\$ 1,309,797	\$ 123,687	\$ -
Financing Fees (2% of principal)	\$ -	\$ 636,500				
Subtotal	\$ 59,313,329	\$ 636,500	\$ 2,372,533	\$ 2,372,533	\$ 2,372,533	\$ -
Total Uses	\$ 255,784,258	\$ 48,136,500	\$ 9,929,107	\$ 9,929,107	\$ 9,929,107	\$ 7,556,574
Project Rate of Return						
Earnings before Debt Service Expense						
Less: Project Costs		\$ (48,136,500)				
Plus: Residual Value (5% of Capital Investment)						\$ 2,375,000
Net Flow IRR N/A		\$ (48,136,500)	\$ (3,173,590)	\$ (2,941,602)	\$ (2,366,287)	\$ (2,322,044)
Subvention Payment (Required for 15% Rate of Return)			\$ 10,430,000	\$ 10,430,000	\$ 10,430,000	\$ 10,430,000
Modified Net Flow IRR= 15.0%		\$ (48,136,500)	\$ 7,256,410	\$ 7,488,398	\$ 8,063,713	\$ 10,482,956
Debt Service Coverage						
Cashflow Available for Debt Service			\$ 3,085,932	\$ 3,317,919	\$ 3,893,235	\$ 3,937,478
Total Debt Service			\$ 2,372,533	\$ 2,372,533	\$ 2,372,533	
Debt Service Coverage Ratio	1.30		1.30	1.40	1.64	

Pro Forma Income Statement


Alternative 3: MBTA Service Extension with Pawtucket Layover

1998 Dollars

Item/Year		1	6	11	16	25	26
		2000	2005	2010	2015	2024	2025
Revenues	Revenues						
	Fare Revenue	\$ 3,160,391	\$ 3,260,469	\$ 3,363,098	\$ 3,534,648	\$ 3,885,792	\$ 3,904,451
	Parking	\$ 456,549	\$ 471,006	\$ 485,832	\$ 510,614	\$ 558,451	\$ 564,035
	Advertising Revenues (1% of Operating Expenses)	\$ 75,568	\$ 75,568	\$ 75,568	\$ 75,568	\$ 75,568	\$ 75,568
	Total Revenues	\$ 3,692,508	\$ 3,807,041	\$ 3,924,493	\$ 4,120,828	\$ 4,499,809	\$ 4,544,052
Expenses	Operating Costs						
	Trackage Use Fee	\$ 2,167,199	\$ 2,167,199	\$ 2,167,199	\$ 2,167,199	\$ 2,167,199	\$ 2,167,199
	State Assistance	\$ 2,642,227	\$ 2,642,227	\$ 2,642,227	\$ 2,642,227	\$ 2,642,227	\$ 2,642,227
	Service Support Staff	\$ 251,000	\$ 251,000	\$ 251,000	\$ 251,000	\$ 251,000	\$ 251,000
	Mechanical Costs (Staff & Purchased Services)	\$ 221,956	\$ 221,956	\$ 221,956	\$ 221,956	\$ 221,956	\$ 221,956
	Equipment Maintenance Materials	\$ 1,028,200	\$ 1,028,200	\$ 1,028,200	\$ 1,028,200	\$ 1,028,200	\$ 1,028,200
	Shared Equipment Costs	\$ 667,800	\$ 667,800	\$ 667,800	\$ 667,800	\$ 667,800	\$ 667,800
	Fuel Costs	\$ 548,192	\$ 548,192	\$ 548,192	\$ 548,192	\$ 548,192	\$ 548,192
	Station Maintenance	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
	Total Operating Costs	\$ 7,556,574	\$ 7,556,574	\$ 7,556,574	\$ 7,556,574	\$ 7,556,574	\$ 7,556,574
	Earnings Before Debt Service Expense	\$ (3,864,066)	\$ (3,749,533)	\$ (3,632,081)	\$ (3,435,746)	\$ (3,056,765)	\$ (3,012,522)
	Debt Service						
	Principal Repayment	\$ 822,158	\$ 813,136	\$ 1,062,736	\$ 1,388,953	\$ 2,248,847	\$ -
	Interest Expense	\$ 1,750,375	\$ 1,559,397	\$ 1,309,797	\$ 983,580	\$ 123,887	\$ -
	Total Debt Service	\$ 2,372,533	\$ 2,372,533	\$ 2,372,533	\$ 2,372,533	\$ 2,372,533	\$ -
	Total Current Expenses	\$ 9,929,107	\$ 9,929,107	\$ 9,929,107	\$ 9,929,107	\$ 9,929,107	\$ 7,556,574
Net Income	Net Income / (Cost of Service in Excess of Net Income)	\$ (6,236,601)	\$ (6,122,066)	\$ (6,004,614)	\$ (5,808,280)	\$ (5,429,299)	\$ (3,012,522)
	State Operating Assistance	\$ 6,950,000	\$ 6,950,000	\$ 6,950,000	\$ 6,950,000	\$ 6,950,000	\$ 6,950,000
	Farebox Recovery (% of Operating Costs)	Min. = 42%	42%	43%	45%	47%	51%
	Farebox Recovery (% of Total Current Expenses)	Min. = 32%	32%	33%	34%	36%	52%

LABOR OBLIGATIONS



 U.S. Department of Transportation

[Federal Register: December 7, 1995 (Volume 60, Number 235)]
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Part III

Department of Labor

Office of Labor-Management Programs

29 CFR Part 215

Guidelines, Section 5333(b), Federal Transit Law; Final Rule

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DEPARTMENT OF LABOR

Office of Labor-Management Programs

29 CFR Part 215

RIN 1294-AA14

Guidelines, Section 5333(b), Federal Transit Law

AGENCY: Office of Labor-Management Programs, Office of the American Workplace, Labor.

ACTION: Final guidelines.

SUMMARY: The Federal Transit law, Title 49 U.S.C., Chapter 53, provides, in general, at Section 5333(b) (commonly referred to as "Section 13(c)", that, as a condition of certain Federal financial assistance by the Department of Transportation's Federal Transit Administration (FTA) in financing mass transportation systems, fair and equitable arrangements must be made, as determined by the Department of Labor (the Department), to protect the interests of employees affected by such assistance. In conjunction with the Department's role in making such determinations, the Department is providing

information concerning its procedures for processing applications for assistance under the Federal Transit Law, and certification by the Department of acceptable protective arrangements.

DATES: These Guidelines become effective January 8, 1996.

FOR FURTHER INFORMATION CONTACT: Kelley Andrews, Director, Statutory Programs, U.S. Department of Labor, 200 Constitution Avenue, NW., Room N-5411, Washington, DC 20210, (202) 219-4473.

SUPPLEMENTARY INFORMATION:

I. Background

Section 5333(b) of the Federal Transit law requires that arrangements be made to protect certain rights of mass transit employees affected by grants of Federal funds for the acquisition, improvement, or operation of a transit system. These rights include the preservation of rights, privileges, and benefits under existing collective bargaining agreements, the continuation of collective bargaining rights, the protection of individual employees against a worsening of their positions related to employment, assurances of employment to employees of acquired mass transportation systems, priority of reemployment, and paid training or retraining. In administering this program, the Department notifies relevant unions, if any, in the area of the proposed project and provides the grant applicant and the affected union(s) an opportunity to develop the terms and conditions of the protections. The Department provides technical and mediation assistance to the parties during the negotiations. These new guidelines replace guidelines which have been in effect since May 1, 1978.

The Department's Office of Labor-Management Programs' Notice of Proposed Rulemaking (NPRM), issued June 29, 1995 (FR Vol. 60, No. 125, pg. 34072), proposed to change the procedures for certifying employee protective arrangements which are required as a condition of assistance under the Federal Transit law, in order to expedite the process and make it more predictable to the parties.

Approximately 85% of the Department's certifications in the past five years have been issued within 90 days of the date they were received from FTA. The processing time for the remaining 15%, however, has been less predictable. The Department's objective in revising its procedures is to enhance the efficiency and predictability of the certification process for all transit grant applications while assuring that the required employee protections are in place. Where comments were submitted which supported this objective, the guidelines have been revised, as appropriate, to reflect the comments, and are discussed under Section II, Summary and Discussion of Comments.

Numerous comments were submitted which relate in a general way to the Department's administration of this employee protection program. The guidelines were said to contain loopholes which would undermine the effort to establish and meet deadlines for certification, create new legal standards resulting in a more arbitrary and time-consuming process, and establish protections and confer authority on the Department which exceed the statute.

The Department has carefully reviewed the new guidelines with these comments very much in mind to assure that its appropriate statutory mandate will be fulfilled, without creating unnecessary "loopholes" or legal standards which would result in a more arbitrary or time consuming process. Because the statute itself requires the Department to exercise discretion and flexibility in determining what is fair and equitable, the guidelines must also provide an appropriate level of flexibility. Where appropriate, the guidelines have been changed to reflect these concerns and in other instances, where no change was deemed necessary, the specific points raised are also discussed in Section II, Summary and Discussion of Comments.

The Department has also made a minor adjustment of a technical nature to Sec. 215.2. This section, which addresses the required documentation to be included in the grant application, has been modified to reflect that the content of the grant application is as determined by the FTA. The Department is not requesting any information for processing of the grant that is not required by the FTA.

The new guidelines differ from the previous guidelines and the Department's practice by establishing strict time frames for the certification of protections in a more expeditious and predictable manner. The procedures established by these guidelines will assure that the required protections can be certified, within sixty days after the initiation of processing by the Department, permitting the release of the Federal transit grant funds.

The new guidelines continue to encourage local negotiations or discussions for the development of employee protection terms. The guidelines, in recognition of the fact that there are some states where bargaining is prohibited for public employees, allow for "discussion" where necessary to satisfy the Federal Transit law in a manner that does not violate state or local law.

The guidelines also eliminate referral of applications when the grant is for routine replacement of equipment and/or facilities of like kind and character. In cases where referral to the unions is appropriate, the referral will include the intended terms of certification. The parties will be given 15 days from the date of the referral to submit objections, if any, to the referral terms. The Department will determine within 10 days thereafter whether objections are sufficient. Should the Department find that the objections are not sufficient, the Department will issue its certification on the terms specified in the referral. When objections are found to be sufficient, negotiations may proceed and the Department may provide technical and mediatory assistance where appropriate. In the event the protections cannot be agreed to within 60 days from the original referral date, the Department will issue an interim certification, permitting the release of Federal transit grant funds. In the event that the parties are still not able to resolve their differences within 60 days after the Department has issued the interim certification, the Department will set forth the protective terms in a final certification.

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Finally, it seems clear from the comments received that several parties are concerned about and wish to discuss and resolve a number of substantive issues relating to this program. While this is an important matter, these are procedural guidelines and thus not the appropriate forum for the resolution of such substantive rather than procedural issues. The Department's policies on substantive issues are generally addressed through certifications and are discussed in the Department's determination letters.

II. Summary and Discussion of the Comments

Twenty comments were submitted and considered, including one from a private individual.

Two comments were received from the following public transit authorities and planning organizations:

- --Northern Illinois Regional Transportation Authority
- --Metropolitan Transit Commission, Oakland, CA

Twelve comments were received from the following public transit providers:

- --Central Arkansas Transit Authority
- --New York City Department of Transportation
- --Metropolitan Transit Authority, New York, NY
- --Triangle Transit Authority, Research Triangle Park, NC
- --Public Works Office/Transit, Johnson County KS
- --StarTran, Lincoln, NE
- --Washington Metropolitan Area Transit Authority
- --Los Angeles County Metropolitan Transit Authority
- --Regional Transportation Commission, Clark County, NV
- --New Jersey Transit Corporation
- --North County Transit District, Oceanside, CA
- --Metropolitan Atlanta Rapid Transit Authority

One comment was received from a state department of transportation:

- --State of Michigan, Department of Transportation

Three labor organizations provided comments:

- --Amalgamated Transit Union
- --Transportation Trades Department, AFL-CIO
- --Transport Workers Union of America

Finally, one public transit association provided comments:

- --American Public Transit Association

The Department has carefully reviewed and considered all of the comments in developing these guidelines. The following provides a summary of the comments and the Department's response.

A. Definition of ``Irreparable Harm''

One comment indicated that the safeguard against irreparable harm to employees in Sec. 215.3(d)(8) pending completion of the special dispute resolution process is an essential protection which should be included in the guidelines. Others, however, suggested that the language concerning irreparable harm would add a new substantive protection under section 5333(b), which they view as providing a ``remedial scheme to provide compensation" when employees are affected by a project.

Section 5333(b), requires more than providing compensation for impacts upon employees. It is also intended to minimize the impact of Federal projects on employees. The restriction against causing ``irreparable harm" in Sec. 215.3(d)(8), however, is limited solely to any action which would ``result in irreparable harm to employees if such action concerns matters subject to the steps set forth in paragraph (e) of this section." (Emphasis added.) In specifying that no action may be taken which would result in irreparable harm, the Department intends for the recipient of funds to be able to take any necessary action that will not irreparably harm employees while allowing a project to move forward. The minimal restriction would remain in effect only until final terms and conditions are determined and certified.

B. Definition of ``Material Effect''

The Sec. 215.3(b)(1) provision with respect to ``material effect" states that the procedural requirements of Sec. 215.3(b)(2) through Sec. 215.3(h) will not apply ``absent a potentially material effect on employees." One comment indicated that the phrase ``material effect on employees" should be limited in its scope to material adverse effects on employees so that if a project for routine replacement of equipment and/or facilities of like kind and character has a positive effect on employees, no referral would be required. Impacts, however, may be viewed by some individuals as positive while others view the same effect as contrary to their interests. Therefore, no adjustment need be made to accommodate this concern.

One comment noted that ``[i]t is not clear whether the substantive determination of materiality (material effect on employees) is to be a subjective judgment of the Department or a legal determination based on specific standards or precedents." The Department, however, will consult with FTA, where necessary, and will determine which projects have a ``potentially material effect on employees" based on available applicable precedent and policy.

C. Definition of the Phrase ``Where Circumstances So Warrant''

Several comments were made indicating that the phrase ``where circumstances so warrant" in Sec. 215.3(h) enables the Department to retain the right to withhold certification at its discretion. One saw this as an expansion of the language of the law which would give the Department ``veto authority over

the release of grant funds." The Department intends the phrase "where circumstances so warrant" to mean that certification will not be issued where circumstances inconsistent with the statute prevent the Department from certifying. For instance, in a situation involving the Metropolitan Atlanta Rapid Transit Authority (MARTA) in Georgia, the Department was unable to certify grants for a short time because state law prohibited MARTA from providing the requisite protections. Accordingly, given that at least one comment indicated this is an expansion of the current law, the Department will clarify the intent of this language by amending Sec. 215.3(h) of the guidelines to read: "Notwithstanding the foregoing, the Department retains the right to withhold certification where circumstances inconsistent with the statute so warrant until such circumstances have been resolved."

D. Definition of "Sufficient" as Applied to Objections to Certification

In Sec. 215.3(d)(2)(i), the guidelines provide that the Department will "determine whether the objections raised are sufficient" when one party objects to terms and conditions proposed by the Department as the basis for certification of a project. In Sec. 215.3(d)(3), the guidelines set forth the criteria which the Department will consider in determining whether an objection will be considered sufficient.

Comments indicated concern that the transit agencies would not be given the same opportunity as would be provided to the employees to object to the referred terms and conditions, citing as an example where it believed that existing protections include provisions that are no longer legally required or that are burdensome. Such objections, if raised by the transit agencies, would require the Department to make a determination as to whether they are sufficient. The definition does not favor either party over the other.

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Another comment indicated that, in order to avoid challenges as to whether legal or factual circumstances have changed, the Department should modify Sec. 215.3(d)(3) so that it will consider an objection to be sufficient when: (ii) the objection "concerns legal or factual issues relating to the terms proposed to be certified that may materially affect the rights or interests of employees." The current proposed language requires that the Department consider an objection to be sufficient when: (ii) the objection concerns changes in legal or factual circumstances that materially affect the rights or interests of employees.

In response to this comment, the Department has determined that there is a need to clarify Sec. 215.3(d)(3)(ii) and accordingly we have added the word "may" before "materially affect."

E. Definition of the Term "Appropriate" in Sec. 215.3(b)(3)

One comment noted that this section sets forth procedures where there is a new applicant or where the previous arrangements are "not appropriate to the current projects" without providing guidance as to what would be considered "appropriate." This section further specifies that the Department will refer such grants to the parties based on terms and conditions similar to either the Model Agreement for operating projects or the Special Warranty for capital projects.

There are several situations in which it would not be appropriate to refer a project on the basis of previously certified arrangements. It is not possible to anticipate all the factual circumstances where the current terms would no longer be appropriate. However, referral on the basis of existing arrangements is not appropriate in a situation where the Department is aware that the terms and conditions of the existing arrangements do not satisfy the conditions of the statute in the circumstances presented, perhaps because of a change in the state law or a change in the manner in which the transit system is operated (e.g., the public body decides to operate services previously provided through a management company drawing into question how specific protections required by the statute will be provided). Another situation might be one in which the parties have, for instance, negotiated a capital agreement, but have not developed an agreement for application to operating assistance projects.

F. Standards for Operating and Capital Grants Where Protections Do Not Already

Exist

One comment noted that the "Model Agreement was developed to provide a template for parties who wished to use it, but was never intended to be a 'standard' or 'default' option." It was further suggested that the details of the protective arrangements should be largely left to the parties. Another comment noted that the proposed Sec. 215.3(b)(3)(i) references "terms and conditions similar to those of the Model Agreement," and questioned which "similar" terms and conditions would be specified by the Department. Other questions included: Will the parties be given the opportunity to negotiate? Will the Department abrogate a party's right to withdraw from the Model Agreement?

Although the Model Agreement was not originally developed for application to all operating assistance grants, the agreement has been certified as meeting the requirements of the statute, and is applied with the agreement of the parties in the majority of operating assistance projects. The Department intends to expedite the certification process by basing its initial referral of operating assistance grants on terms and conditions similar to those of the Model Agreement when no other existing arrangement is applicable. As with referrals for applicants with previously certified arrangements, the parties will have 15 days from the date of the referral and notification letters to submit objections to the referred terms. The parties will be afforded the opportunity to negotiate alternative terms if the Department determines an objection to be sufficient in accordance with Sec. 215.3(d)(3).

The Department will not "abrogate" the right of any party to withdraw from the Model Agreement in a timely manner. However, if a party withdraws from the Model Agreement, referral of the next operating project involving that party, in accordance with Sec. 215.3(b)(3)(i), will be based on terms and conditions "similar" to the Model Agreement because there will be no previously certified arrangements "appropriate to the current project." The parties will then need to negotiate terms and conditions, under the procedures and timeframes outlined in the guidelines, to substitute for those which they object to from the Model Agreement.

Another comment suggested that, in order to make the standards for protections required under capital grants and operating grants conform with each other, Sec. 215.3(b)(3)(i) should be redrafted to require that for operating grants, the terms and conditions will be based on arrangements no less protective than those of the Model Agreement. The Department has concluded that such consistency could more appropriately be obtained by including language in Sec. 215.3(b)(3)(ii), which indicates that "for capital grants, the terms and conditions will be based on arrangements similar to those of the Special Warranty applied pursuant to section 5311." This language affords the Department greater latitude in incorporating the language of prior Departmental determinations into referrals.

One comment noted that "one of the paragraphs ((b)(3)(ii)) cited as being applicable to (b)(1) projects specifically states that it applies to grants other than those referenced in (b)(1)." We have deleted the phrase "other than those for replacement equipment or facilities referenced in paragraph (b)(1) of this section," from Sec. 215.3(b)(3)(ii) to clarify that the Special Warranty will be used for new applicants which apply for routine replacement of equipment and/or facilities of like kind and character.

Comments also questioned using the Special Warranty as the basis for certification of capital grants. As with the Model Agreement, the Special Warranty has been previously certified by the Department as meeting the requirements of the statute and will serve as a starting point for the parties to develop protections should sufficient objections be submitted to the proposed terms. This will expedite the processing of section 5333(b) certifications while continuing to ensure the right of the parties to negotiate appropriate protective arrangements.

G. Interim Certifications Under Sec. 215.3(d)(7)

Several comments noted that the court has held that the Department does not have the statutory authority to issue conditional certifications. These comments suggest that the proposed interim certification would be a conditional certification. The conditional certifications rejected by the courts in *Amalgamated Transit Union v. Donovan*, 767 F.2d 939 (D.C. Cir. 1985), however, were not statutorily sufficient

because they did not ensure that all requirements of the statute were satisfied prior to certification. In those instances, the Department had issued certifications which were lacking mandatory terms and conditions. The interim certification provided for in these guidelines will fully satisfy the requirements of the statute based upon

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the information available at the time of certification. Because the terms of an interim certification will meet all the requirements of the statute, the interim certification does not constitute a "conditional" certification.

Other comments suggested that the receipt of Federal funds may affect a transit system's ability to later challenge different certification arrangements if such are subsequently imposed on it by the Department or that a system may prefer not to accept an interim certification because different arrangements could later be imposed. In the Department's view, the vast majority of applicants will benefit from the expedited certification procedure. The interim certification allows the transit authority to execute its grant contract with the FTA, thus avoiding, in certain instances, a potential lapse of funds. Moreover, the applicants will be aware of the disputed issues and thus be able to judge any potential liability if a project is implemented and the Department imposes language in the final certification that differs from that in the interim certification. In any event, under the guidelines, final certification will be issued within 60 days of the interim certification, thus limiting any period of uncertainty for transit systems.

H. Time Limits Under Sec. 215.3(d)(1) for the Parties To Submit Objections

Several comments indicated support for the Department's "progress towards procedural reform" and noted that strict time limits for processing and issuance of certifications "would truly expedite the grant application and approval process for many grantees. Still others commented that "the proposed changes are consistent with the basic purposes of 13(c)."

Comments also suggested that there should be consequences if the Department or the parties fail to act within established timeframes. The Department recognizes the need to ensure compliance with the deadlines established in these guidelines. Funding cannot be released in the absence of a certification that employee protections are in place since the statute mandates the Department's certification as a precondition to the release of Federal funds.

If objections by the parties are not timely, the Department will proceed with certification on the basis proposed in the referral. To accommodate objections from multiple parties, however, the Department has made a technical correction to Sec. 215.3(d)(2) to indicate that a determination regarding the sufficiency of objections will be made within 10 days of the date for submitting objections.

I. Procedures Under Sec. 215.3(b)(1) for Routine Replacement of Equipment and/or Facilities of Like Kind and Character Exempting These From Referral

Section 215.3(b)(1) of the proposed guidelines specifies that grants for routine replacement of equipment and/or facilities of like kind and character will be certified without a referral to labor organizations absent a potentially material effect on employees. Several comments were made in support of this proposal. One comment indicated that eliminating the referral of applications for grants for routine replacement of equipment and/or facilities "would benefit our agency immediately if approved and implemented."

One comment "strongly object[ed] to exempting capital grants for routine replacement of equipment of like kind and character and/or facilities of like kind and character from the modified procedural requirements." The comment requested that this exclusion be removed from the final guidelines and that routine replacement grants be processed under the modified grant procedures applicable to all other projects.

Three comments indicated that the proposed guidelines failed to establish a procedure for the parties to

provide positions on the issue of "material effect on employees" to the Department and, also, that the proposed guidelines did not establish a time frame for the Department's determination of whether a referral would be made.

It is not necessary for labor organizations to receive referrals of grants for "routine replacement" projects. In instances where no referral is made, the Department will apply existing protective arrangements which have been deemed satisfactory for similar projects in the past. For new applicants seeking "routine replacement" capital items, the Department will apply protections based upon the Special Warranty. The Department will only proceed with a certification in such instances where all capital items are clearly "routine replacement" items of like kind and character. The Department will consult with the FTA if necessary to determine whether a grant includes only routine replacement items.

No opportunity has been provided in the guidelines for input from the parties with regard to any "potentially material effect" on employees. However, where there is routine replacement of capital items, which will be used in the same locations and in the same manner as the original capital items, it is unlikely that there will be an impact upon employees which would not be covered by the existing protective arrangements.

Routinely seeking input on this issue from the parties in advance of the Department's determination would require nearly as much time as a routine referral. Should the Department deem it necessary, however, the Department could seek the input of the parties on the issue of "potentially material effect."

It is not necessary for the guidelines to include a time frame for the Department's determination of whether a referral would be made. FTA is responsible for identifying in its transmittal to the Department that a grant application is for the purpose of purchasing routine replacement equipment and/or facilities of like kind and character. If the information in the grant application is sufficient for the Department to concur in this designation, the Department will promptly proceed with its certification, absent a finding of "potentially material effect" pursuant to Sec. 215.3(b)(1). If the information in the grant application does not support a conclusion that the project is for routine replacement equipment and/or facilities of like kind and character, the Department will refer the project to the appropriate parties in accordance with the procedures in Sec. 215.3(b) within 5 days of receipt from the FTA.

For information purposes only, applications for "routine replacement" items will continue to be transmitted to the labor organizations representing employees in the service area of the projects.

J. Procedures for Protective Arrangements as to States That Pass Through Funds to Subrecipients

Two comments indicate that the Department has previously introduced policies and procedures for processing of statewide grant applications which are not reflected in its earlier guidelines. They further suggest that procedures recently developed by the Department for processing of grants to States which pass through funds to subrecipients, particularly to small urban and rural recipients, be reflected in the new guidelines in a separate section. In response to these comments, the Department has determined that it would be appropriate to add a new Sec. 215.3(a)(3) to clarify that protections generally will be provided by the subrecipients which receive funds through a State administrative agency.

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Accordingly, the following section has been added:

215.3(a)(3) If an application involves a grant to a state administrative agency which will pass through assistance to subrecipients, the Department of Labor will refer and process each subrecipient's respective portion of the project in accordance with this section. If a state administrative agency has previously provided employee protections on behalf of subrecipients, the referral will be based on those terms and conditions. These procedures are not applicable to grants under section 5311.

It was also suggested that the Department should automatically certify section 5309 (formerly section 3)

projects for rural providers on the basis of the Special Warranty. Under the guidelines, referrals for rural providers receiving funds under section 5309 will be based upon terms and conditions similar to those of the Special Warranty, unless there are previously certified arrangements which have been applied to the section 5309 projects. However, although the guidelines at Sec. 215.3(b)(3)(iii) indicated that referrals for projects under section 5311 (formerly section 18) will be made on the basis of the Special Warranty, the Department will amend the proposed guidelines to continue to provide for automatic certification of applications pursuant to section 5311 for rural providers.

K. Procedure for Dispute Resolution to Determine Terms and Conditions of Final Certifications, Sec. 215.3(e)(4)

One comment stated that "[t]he regulations explicitly decline to establish the manner of dispute resolution by the Department of Labor." Another indicated that Sec. 215.3(e)(4) appears to give the Department the authority to utilize alternative methods of dispute resolution, noting that the statute does not allow the Department to delegate this authority to a third party. Section 215.3(e)(4) specifically reserves to the Department the sole authority to render the final determination. The statute does not mandate that the Department use a specific dispute resolution procedure.

L. Protections for Employees Not Represented by a Labor Organization

One comment indicated that Sec. 215.4 improperly expands the protections afforded to employees not represented by a labor organization by affording such employees "the same protections" as those afforded to employees represented by a labor organization rather than "substantially the same protections."

The concerns raised by this comment that rights have been expanded have been clarified by amending the language in Sec. 215.4(b) to eliminate any reference to the terms and conditions authorized in Sec. 215.3(b). Instead, Sec. 215.4(b) will provide, as in the prior guidelines, that the protective terms and conditions in the letter of certification will be set forth by the Department. There is no expansion of rights provided in these guidelines.

M. Procedures for Processing Amendatory Grant Applications

One comment suggested that "[t]he special processing exemption for 'amendatory applications' in Sec. 215.3(c) as amplified in Sec. 215.5 should be eliminated in its entirety." It argued that, since all grants are subject to only a 15 day review period for the purpose of filing any objections, and any grant amendment which revises a project in only "immaterial respects" would not give rise to an objection considered sufficient under the new procedures, turnaround is expedited and employee representatives should have the opportunity "to provide their views within the narrow time frame specified to ensure that the agency is fully informed regarding the potential effects of each project."

The automatic certification of amendatory grants is limited to those where changes are immaterial. If there is a change in the scope of a project, amendatory grants should not and will not be processed under this expedited procedure. The revised procedures for processing other grants should not give rise to new procedures for processing of amendatory grants containing immaterial changes which would have the potential for delaying their approval. Thus, the suggested changes to the proposed guidelines are not necessary.

N. Other Comments

1. One comment suggested that the proposed guidelines be withdrawn because they appear to draw substantial content from union proposed reforms. Another comment indicated that the "proposed rule has been undertaken without the input of the transit industry" and that State and local public body transit systems were not involved in the development of the NPRM. Several comments suggested that the regulations be withdrawn and that the rulemaking process be undertaken with greater consideration for the procedures set forth in Executive Order 12866 which "provides that interested parties should be

involved prior to issuance of a proposed rule." The Department's decision to provide 30 days rather than 60 days for a comment period was also raised.

The Department developed language based on concepts favored by both unions and transit management. As demonstrated by the numerous comments received from interested parties from across the country, the rulemaking process in this instance has afforded all the interested parties with ample opportunity to provide comments and input on the procedural issues which are the subject of these guidelines.

2. One comment noted that the Department may view these procedures as "guidelines" rather than "rules." The comment further notes that "rules are binding on parties, including Federal agencies, and subject to specific rulemaking procedures; in contrast, "guidelines" are generally considered informal in nature and presumably are not binding on parties." There is no statutory authority to issue regulations under section 5333(b). The guidelines, however, are intended to be binding in administering this employee protection program.

3. Numerous comments addressed administrative processes followed by the Department and raised matters concerning the Administrative Procedures Act. It was suggested that procedural safeguards against what the parties characterize as "ex parte contacts" with labor representatives in pending matters should be addressed in the guidelines. Similarly, comments proposed that the guidelines address how final decisions on disputed issues would be made available under Sec. 215.3(e)(5) and address the matter of the procedural ability to have access to and to rely on matters previously ruled upon by the Department. Finally, comments indicated that the proposed guidelines did not require the Department to "articulate the underlying legal rationale for its decisions" nor did they provide for meaningful judicial review for parties who receive an adverse ruling from the Department.

The Department does not believe that it is appropriate to restrict contacts with individual parties in the processing of certifications of employee protections. In processing FTA grant applications, the Department's role includes providing technical and mediatory assistance to the parties. As contemplated by the legislative history, the efforts of the Department are directed toward facilitating an agreement between the transit authority and the union in order to ensure that the requirements of the statute are satisfied. During mediation the Department's

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representative may discuss issues separately with each party, suggest bases for settlement in an effort to resolve the dispute, and respond to requests for technical assistance. If the parties do not reach an agreement and the Department must make a determination of the terms and conditions upon which a certification will be based, the standard for communications with the parties shifts to a more formal process, where outstanding issues are specified and schedules for briefs and counterbriefs are committed to written instructions. No exploration of options or issues occurs at this time absent the initiation or consent of the other party.

Under the guidelines, the Department will take steps pursuant to Sec. 215.3(e)(5) to assure the parties' access to the final decisions it renders on disputed issues. The Department will continue to send copies of its final decisions to the FTA and the affected applicant and labor organizations. Similarly, the guidelines address the matter of access to Departmental decisions by making available the Department's final determinations on disputed issues. In fact, during efforts to facilitate agreement, these decisions are regularly provided to parties involved in negotiations when their negotiations have addressed related subjects.

The parties will continue to be able to rely on previously issued determinations to the extent that circumstances are similar to those in the prior determinations. Certifications will continue to be developed on a case by case basis to ensure that protections are statutorily sufficient in the circumstances presented by the specific project and under any applicable state law.

In establishing "fair and equitable" protections under the statute in those circumstances where the parties are unable to reach agreement, the Department provides the underlying rationale for the terms and

conditions upon which certification is based. The Department will continue to provide the rationale in these cases to explain the basis of its decisions to the parties and to facilitate other parties' efforts to reach agreement in cases where the circumstances are comparable. In addition, judicial review of the Department's certification is available to the parties. See, e.g., *Amalgamated Transit Union v. Donovan*, 767 F.2d 939 (D.C. Cir. 1985).

4. One comment indicated that the guidelines do not define whether the "days" referred to in the various deadlines means calendar or business days. The Department intends for the term "days" to refer to calendar days. When a deadline expires on a date that is not a business day, the deadline will then be considered to be the next business day.

5. One comment suggests that, to minimize legal expenses, the briefing schedule, if one is adopted, should be shortened and a one- step process instituted rather than requiring reply briefs. The guidelines at Sec. 215.3(e)(3) provide for some flexibility in determining the briefing schedule. In the past, the Department has typically provided up to 30 days for briefs and for reply briefs, which were routinely required, up to 10 days. The proposed guidelines specify "no more than twenty (20) days for opening briefs and no more than ten (10) days for reply briefs, when the Department deems reply briefs to be beneficial." (Emphasis added.) The guidelines, therefore, already provide for an expedited process which the Department can accelerate when appropriate. The guidelines balance the need for an expedited process with the need for a full disclosure of pertinent information to facilitate the determination process.

6. One comment requested that the Department address the procedures for processing claims determinations under the statute. This is not an appropriate issue to be addressed under these guidelines. These are procedural guidelines and thus not the appropriate forum for resolution of such issues.

III. Administrative Notices

A. Executive Order 12866

These guidelines have been reviewed by the Office of Management and Budget in accordance with Executive Order 12866.

B. Regulatory Flexibility Act

The Agency Head has certified that these guidelines are not expected to have a significant impact on a substantial number of small entities as defined in the Regulatory Flexibility Act.

C. Paperwork Reduction Act

These guidelines contain no information collection requirements for purposes of the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.).

List of Subjects in 29 CFR Part 215

Grant administration; Grants--transportation; Labor-management relations; Labor unions; Mass transportation.

Signed at Washington, DC this ----- day of -----, 1995.

Charles L. Smith,
Deputy Assistant Secretary.

Accordingly, 29 CFR Chapter II is amended by revising Part 215 to read as follows:

PART 215--GUIDELINES, SECTION 5333(b), FEDERAL TRANSIT LAW

Sec.

- 215.1 Purpose.
- 215.2 General.
- 215.3 Employees represented by a labor organization.
- 215.4 Employees not represented by a labor organization.
- 215.5 Processing of amendatory applications.
- 215.6 The Model Agreement.
- 215.7 The Speciality Warranty.
- 215.8 Department of Labor contact.

Authority: Secretary's Order No. 2-93, 58 FR 42578, August 10, 1993.

Sec. 215.1 Purpose.

(a) The purpose of these guidelines is to provide information concerning the Department of Labor's administrative procedures in processing applications for assistance under the Federal Transit law, as codified at 49 U.S.C. chapter 53.

(b) Section 5333(b) of title 49 of the United States Code reads as follows:

Employee protective arrangements.--(1) As a condition of financial assistance under sections 5307-5312, 5318(d), 5323 (a)(1), (b), (d), and (e), 5328, 5337, and 5338(j)(5) of this title, the interests of employees affected by the assistance shall be protected under arrangements the Secretary of Labor concludes are fair and equitable. The agreement granting the assistance under sections 5307-5312, 5318(d), 5323 (a)(1), (b), (d), and (e), 5328, 5337, and 5338(j)(5) shall specify the arrangements.

(2) Arrangements under this subsection shall include provisions that may be necessary for--
(A) the preservation of rights, privileges, and benefits (including continuation of pension rights and benefits) under existing collective bargaining agreements or otherwise;
(B) the continuation of collective bargaining rights;
(C) the protection of individual employees against a worsening of their positions related to employment;
(D) assurances of employment to employees of acquired mass transportation systems;
(E) assurances of priority of reemployment of employees whose employment is ended or who are laid off; and
(F) paid training or retraining programs. (3) Arrangements under this subsection shall provide benefits at least equal to benefits established under section 11347 of this title. <[[Page 62970]]

Sec. 215.2 General.

Upon receipt of copies of applications for Federal assistance subject to 49 U.S.C. 5333(b), together with a request for the certification of employee protective arrangements from the Department of Transportation, the Department of Labor will process those applications, which may be in either preliminary or final form. The Federal Transit Administration will provide the Department with the information necessary to enable the Department to certify the project.

Sec. 215.3 Employees represented by a labor organization.

(a)(1) If affected employees are represented by a labor organization, it is expected that where appropriate, protective arrangements shall be the product of negotiation/discussion, pursuant to these guidelines.

(2) In instances where states or political subdivisions are subject to legal restrictions on bargaining with employee organizations, the Department of Labor will utilize special procedures to satisfy the Federal statute in a manner which does not contravene state or local law. For example, employee protective terms and conditions, acceptable to both employee and applicant representatives, may be incorporated into a resolution adopted by the involved local government.

- (3) If an application involves a grant to a state administrative agency which will pass assistance through to subrecipients, the Department of Labor will refer and process each subrecipient's respective portion of the project in accordance with this section. If a state administrative agency has previously provided employee protections on behalf of subrecipients, the referral will be based on those terms and conditions. These procedures are not applicable to grants under section 5311.
- (b) Upon receipt of an application involving affected employees represented by a labor organization, the Department of Labor will refer a copy of the application to that organization and notify the applicant of referral.
- (1) If an application involves only a capital grant for routine replacement of equipment of like kind and character and/or facilities of like kind and character, the procedural requirements set forth in Secs. 215.3(b)(2) through 215.3(h) of these guidelines will not apply absent a potentially material effect on employees. Where no such effect is found, the Department of Labor will certify the application based on the terms and conditions as referenced in Secs. 215.3(b)(2) or 215.3(b)(3)(ii).
- (2) For applicants with previously certified arrangements; the referral will be based on those terms and conditions.
- (3) For new applicants and applicants for which previously certified arrangements are not appropriate to the current project, the referral will be based on appropriate terms and conditions specified by the Department of Labor, as follows:
- (i) for operating grants, the terms and conditions will be based on arrangements similar to those of the Model Agreement (referred to also as the National Agreement);
- (ii) for capital grants, the terms and conditions will be based on arrangements similar to those of the Special Warranty applied pursuant to section 5311.
- (c) Following referral and notification under paragraph (b) of this section, and subject to the exceptions defined in Sec. 215.5, parties will be expected to engage in good faith efforts to reach mutually acceptable protective arrangements through negotiation/discussion within the timeframes designated under paragraphs (d) and (e) of this section.
- (d) As part of the Department of Labor's review of an application, a time schedule for case processing will be established by the Department of Labor and specified in its referral and notification letters under paragraph 215.3(b) or subsequent written communications to the parties.
- (1) Parties will be given fifteen (15) days from the date of the referral and notification letters to submit objections, if any, to the referred terms. The parties are encouraged to engage in negotiations/discussions during this period with the aim of arriving at a mutually agreeable solution to objections any party has to the terms and conditions of the referral.
- (2) Within ten (10) days of the date for submitting objections, the Department of Labor will: (i) Determine whether the objections raised are sufficient; and (ii) Take one of the two steps described in paragraphs (d)(5) and
- (6) of this section, as appropriate.
- (3) The Department of Labor will consider an objection to be sufficient when: (i) The objection raises material issues that may require alternative employee protections under 49 U.S.C. 5333(b); or (ii) The objection concerns changes in legal or factual circumstances that may materially affect the rights or interests of employees.
- (4) The Department of Labor will consult with the Federal Transit Administration for technical advice as to the validity of objections.

(5) If the Department of Labor determines that there are no sufficient objections, the Department will issue its certification to the Federal Transit Administration.

(6) If the Department of Labor determines that an objection is sufficient, the Department, as appropriate, will direct the parties to commence or continue negotiations/discussions, limited to issues that the Department deems appropriate and limited to a period not to exceed thirty (30) days. The parties will be expected to negotiate/discuss expeditiously and in good faith. The Department of Labor may provide mediation assistance during this period where appropriate. The parties may agree to waive any negotiations/discussions if the Department, after reviewing the objections, develops new terms and conditions acceptable to the parties. At the end of the designated negotiation/ discussion period, if all issues have not been resolved, each party must submit to the Department its final proposal and a statement describing the issues still in dispute.

(7) The Department will issue a certification to the Federal Transit Administration within five (5) days after the end of the negotiation/discussion period designated under paragraph (d)(6) of this section. The certification will be based on terms and conditions agreed to by the parties that the Department concludes meet the requirements of 49 U.S.C. 5333(b). To the extent that no agreement has been reached, the certification will be based on terms and conditions determined by the Department which are no less protective than the terms and conditions included in the referral pursuant to Secs. 215.3(b)(2) and 215.3(b)(3).

(8) Notwithstanding that a certification has been issued to the Federal Transit Administration pursuant to paragraph (d)(7) of this section, no action may be taken which would result in irreparable harm to employees if such action concerns matters subject to the steps set forth in paragraph (e) of this section.

(e) If the certification referred to in paragraph (d)(7) of this section is not based on full mutual agreement of the parties, the Department of Labor will take the following steps to resolve outstanding differences:

(1) The Department will set a schedule that provides for final resolution of the disputed issue(s) within sixty (60) days of the certification referred to in paragraph (d)(7) of this section.

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(2) Within ten (10) days of the issuance of the certification referred to in paragraph (d)(7) of this section, and after reviewing the parties' descriptions of the disputed issues, the Department will define the issues still in dispute and set a schedule for final resolution of all such issues.

(3) The Department may establish a briefing schedule, usually allowing no more than twenty (20) days for opening briefs and no more than ten (10) days for reply briefs, when the Department deems reply briefs to be beneficial. In either event, the Department will issue a final certification to the Federal Transit Administration no later than thirty (30) days after the last briefs are due.

(4) The Department of Labor will decide the manner in which the dispute will be resolved. In making this decision, the Department may consider the form(s) of dispute resolution employed by the parties in their previous dealings as well as various forms of third party dispute resolution that may be appropriate. Any dispute resolution proceedings will normally be expected to commence within thirty (30) days of the certification referred to in paragraph (d)(7) of this section, and the Department will render a final determination, including the bases therefor, within thirty (30) days of the commencement of the proceedings.

(5) The Department will make available final decisions it renders on disputed issues.

(f) Nothing in these guidelines restricts the parties from continuing to negotiate/discuss over final terms and conditions and seeking a final certification of an agreement that meets the requirements of the Act prior to the issuance of a final determination by the Department.

(g) If, subsequent to the issuance of the certification referred to in paragraph (d)(7) of this section, the parties reach an agreement on one or more disputed issues that meets the requirements of the Act, and/or the Department of Labor issues a final decision containing revised terms and conditions, the Department will take appropriate steps to substitute the new terms and conditions for those previously certified to the Federal Transit Administration.

(h) Notwithstanding the foregoing, the Department retains the right to withhold certification where circumstances inconsistent with the statute so warrant until such circumstances have been resolved.

Sec. 215.4 Employees not represented by a labor organization.

(a) The certification made by the Department of Labor will afford the same level of protection to those employees who are not represented by labor organizations.

(b) If there is no labor organization representing employees, the Department of Labor will set forth the protective terms and conditions in the letter of certification.

Sec. 215.5 Processing of amendatory applications.

When an application is supplemental to or revises or amends in immaterial respects an application for which the Department of Labor has already certified that fair and equitable arrangements have been made to protect the interests of mass transit employees affected by the subject project the Department of Labor will on its own initiative apply to the supplemental or other amendatory application the same terms and conditions as were certified for the subject project as originally constituted. The Department of Labor's processing of these applications will be expedited.

Sec. 215.6 The Model Agreement.

The Model (or National) Agreement mentioned in paragraph (b)(3)(i) of Sec. 215.3 refers to the agreement executed on July 23, 1975 by representatives of the American Public Transit Association and the Amalgamated Transit Union and Transport Workers Union of America and on July 31, 1975 by representatives of the Railway Labor Executives' Association, Brotherhood of Locomotive Engineers, Brotherhood of Railway and Airline Clerks and International Association of Machinists and Aerospace Workers. The agreement is intended to serve as a ready-made employee protective arrangement for adoption by local parties in specific operating assistance project situations. The Department has determined that this agreement provides fair and equitable arrangements to protect the interests of employees in general purpose operating assistance project situations and meets the requirements of 49 U.S.C. 5333(b).

Sec. 215.7 The Special Warranty.

The Special Warranty mentioned in paragraph (b)(3)(ii) of Sec. 215.3 refers to the protective arrangements developed for application to the small urban and rural program under section 5311 of the Federal Transit statute. The warranty arrangement represents the understandings of the Department of Labor and the Department of Transportation, reached in May 1979, with respect to the protections to be applied for such grants. The Special Warranty provides fair and equitable arrangements to protect the interests of employees and meets the requirements of 49 U.S.C. 5333(b).

Sec. 215.8 Department of Labor contact.

Questions concerning the subject matter covered by this part should be addressed to Statutory Programs, U.S. Department of Labor, Suite N5411, 200 Constitution Avenue, NW., Washington, DC 20210; phone number 202-219-4473. (Secretary's Order 2-93, 58 FR 42578, August 10, 1993.)

GENERAL LAWS OF MASSACHUSETTS

Chapter 161A: Section 14. Claim for relief by competing private company; procedure.

Section 14. (a) If the authority shall operate or contract for the operation of a mass transportation service or route which is not substantially similar to a service or route previously operated by the authority or the Metropolitan Transit Authority and which is in competition with a pre-existing mass transportation service or route provided by a private company, and if such competition causes substantial economic damage to such company, the company may file a claim for relief with the authority within six months of the commencement of such new operation. The claim for relief shall state all of the facts relevant to the claimed competition and to the alleged damage suffered therefrom. Thereupon the authority shall make a prompt and full investigation of the claim. During its investigation and any subsequent arbitration the authority shall have access to the books and records of the company, including but not limited to copies of all federal and state tax returns of such company for prior years. Within one hundred and twenty calendar days after the filing of the claim for relief the authority shall issue a report setting forth its findings with respect to said claim, together with a detailed statement of the facts as to the respective patronage, revenues and costs on the allegedly competing routes and, if deemed appropriate, an offer of relief. Such offer may include a proposal that the authority purchase all or a portion of the assets of such company, or that the authority grant to such company a contract pursuant to the provisions of section three, or it may propose such other plan or alternative plans of relief as it shall deem reasonable and in the public interest. Within ninety calendar days of receipt of such report the company shall accept or reject any offer or offers of the authority or it shall make one or more counter-offers. The authority shall accept or reject any counter-offers within thirty calendar days of receipt. The authority may modify or revoke any such offer and the company may modify or revoke any such counter-offer at any time before acceptance or rejection.

(b) If the authority shall decline to make any offer to the company, or if all offers or counter-offers shall be rejected, or if the authority or the company shall fail to act with respect to such offers or counter-offers within the time prescribed herein, the matter shall be referred to a board of arbitration for final and binding adjudication. Unless the parties shall agree in writing to some other method of constituting the board of arbitration, of selecting its members and of providing for the rules of procedure by which it shall be governed, the board shall be appointed and its proceedings regulated in accordance with the provisions of the applicable sections of chapter two hundred and fifty-one. The function of the board of arbitration shall be to determine whether the operations of the authority in competition with those of the company during the period complained of have constituted a proximate cause of substantial damage to the company; to identify and designate the portion of the company's operations so damaged, such designation to include a complete list of the physical assets of the company, real and personal, fairly allocable to such portion; and to fix the fair value of such portion of the company's operations as of the time that such competition commenced. In determining such fair value the board of arbitration shall follow generally accepted accounting principles and shall place particular emphasis on capitalization of the average net income of the company for prior years, excluding, however, from such average net income any amounts received by such company under the provisions of section twenty-five B of chapter fifty-eight, and upon an appraisal of the listed physical assets of the company valued at their cost basis less depreciation in a manner consistent with the valuation and depreciation methods employed by the company in filing federal and state income tax returns for such prior years. Under no method of valuation shall any value be placed upon franchises or good will. Within thirty calendar days after the award of the board of arbitration the company shall sell, and the authority shall purchase, the physical assets listed by the board, and the authority shall pay to the company the fair value of the portion of the company's operations as found by the board. The cost to the authority of any acquisition under this section shall be paid from the proceeds of bonds or bond anticipation notes issued as hereinafter provided. An award under this section shall be subject to the availability of such bond or note proceeds and any sale hereunder may be postponed by the agreement of the parties pending the availability of such funds.

(c) The procedure set forth in this section shall constitute the exclusive remedy of a private mass transportation company against the authority for relief from the effects of the authority's operations or

activities, and no action or suit shall be brought against the authority on account of alleged damage suffered except to enforce compliance with the provisions of this section. Nothing herein shall prohibit the authority and the company from entering into an agreement in settlement of the claim for relief at any time, notwithstanding the rejection of an offer or counter-offer, the pendency of arbitration proceedings or the existence of an award. All time requirements set forth herein may be extended by the written agreement of the authority and the company. It is the intent of this section to encourage co-operation between the authority and private companies so as to provide fair and reasonable relief as speedily as possible in case of damaging competition.

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[Updated 9-10-98]

CAPITAL ASSISTANCE PROTECTIVE ARRANGEMENT
PURSUANT TO SECTION 5333(b)
OF TITLE 49 OF THE U.S. CODE, CHAPTER 53
For [Name of Recipient] and [Name of Union]
[Date of Arrangement]

The following language shall be made part of the contract of assistance between the U. S. Department of Transportation and the [name of applicant] [If recipient(s) are involved in addition to the applicant, add: and between the [name of applicant] and [name of recipient(s) referenced in the grant application]:

The terms and conditions set forth below shall apply for the protection of the transportation related employees in the transportation service area of the project represented by [name of union or unions]. The term "Recipient," as used herein, shall refer to the [name of recipient(s) (this will include the applicant if it is also a recipient)].

(1) The Project shall be carried out in such a manner and upon such terms and conditions as will not adversely affect employees of the Recipient and of any other surface public transportation provider in the transportation service area of the Project. It shall be an obligation of the Recipient to assure that any and all transportation services assisted by the Project are contracted for and operated in such a manner that they do not impair the rights and interests of affected employees. The term "Project," as used herein, shall not be limited to the particular facility, service, or operation assisted by Federal funds, but shall include any changes, whether organizational, operational, technological, or otherwise, which are a result of the assistance provided. The phrase "as a result of the Project," shall when used in this arrangement, include events related to the Project occurring in anticipation of, during, and subsequent to the Project and any program of efficiencies or economies related thereto; provided, however, that volume rises and falls of business, or changes in volume and character of employment

brought about solely by causes other than the Project (including any economies or efficiencies unrelated to the Project) are not within the purview of this arrangement.

An employee covered by this arrangement, who is not dismissed, displaced or otherwise worsened in his/her position with regard to his/her employment as a result of the Project, but who is dismissed, displaced or otherwise worsened solely because of the total or partial termination of the Project or exhaustion of Project funding shall not be deemed eligible for a dismissal or displacement allowance within the meaning of paragraphs (6) and (7) of the National (Model) Section 13(c) Agreement.

(2) (a) Where employees of a Recipient are represented for collective bargaining purposes, all Project services provided by that Recipient shall be provided under and in accordance with any collective bargaining agreement applicable to such employees which is then in effect.

(2) (b) The Recipient shall provide to all affected employees sixty (60) days' notice of intended actions which may result in displacements or dismissals or rearrangements of the working forces as a result of the Project. In the case of employees represented by a union, such notice shall be provided by certified mail through their representatives. The notice shall contain a full and adequate statement of the proposed changes, and an estimate of the number of employees affected by the intended changes, and the number and classifications of any jobs with the Recipient available to be filled by such affected employees.

(2) (c) The procedures of this subparagraph shall apply to cases where notices involve employees represented by a union for collective bargaining purposes. At the request of either the Recipient or the representatives of such employees negotiations for the purposes of reaching agreement with respect to the application of the terms and conditions of this arrangement shall commence immediately. These negotiations shall include determining the selection

of forces from among the urban mass transportation employees who may be affected as a result of the Project, to establish which such employees shall be offered employment for which they are qualified or can be trained. If no agreement is reached within twenty (20) days from the commencement of

negotiations, any party to the dispute may submit the matter to dispute settlement procedures in accordance with paragraph (4) of this arrangement. The foregoing procedures shall be complied with and carried out prior to the institution of the intended action.

(3) For the purpose of providing the statutory required protections including those specifically mandated by 49 U.S.C, Section 5333(b)¹, the Recipient agrees to be bound by the terms and conditions of the National (Model) Section 13(c) Agreement executed July 23, 1975.²

(4) Any dispute, claim, or grievance arising from or relating to the interpretation, application or enforcement of the provisions of this arrangement, not otherwise governed by Section 12(c) of the Model Agreement, the Labor-Management Relations Act, as amended, Railway Labor Act, as amended, or by impasse resolution provisions in a collective bargaining or protective arrangement involving the Recipient and the Union, which cannot be settled by the parties thereto within thirty (30) days after the dispute or controversy arises, shall be submitted at the written

1 Arrangements under this subsection shall include provisions that may be necessary for-- (A) the preservation of rights, privileges, and benefits (including continuation of pension rights and benefits) under existing collective bargaining agreements or otherwise; (B) the continuation of collective bargaining rights; (C) the protection of individual employees against a worsening of their positions related to employment; (D) assurances of employment to employees of acquired mass transportation systems; (E) assurances of priority of reemployment of employees whose employment is ended or who are laid off; and (F) paid training or retraining programs. Arrangements under this subsection shall provide benefits at least equal to benefits established under section 11347 of this title 49.

2 For purposes of this Capital Assistance Protective Arrangement, paragraphs (1); (2); (5); (15); (19); (22); (23); (24); (26); (27); (28); and (29) of the National (Model) Section 13(c) Agreement, executed July 23, 1975 are to be omitted.

request of the Recipient or the union to a board of arbitration for arbitration administered by the American Arbitration Association under its Labor Arbitration Rules. The parties further agree to accept the arbitrator's award as final and binding.

In the event of any dispute as to whether or not a particular employee was affected by the Project, it shall be his/her obligation to identify the Project and specify the pertinent facts of the Project relied upon. It shall then be the burden of the Recipient to prove that factors other than the Project affected the employee. The claiming employee shall prevail if it is established that the Project had an effect upon the employee even if other factors may also have affected the employee.

(5) The Recipient will be financially responsible for the application of these conditions and will make the necessary arrangements so that any employee covered by these arrangements, or the union representative of such employee, may file claim of violation of these arrangements with the Recipient within sixty (60) days of the date he/she is terminated or laid off as a result of the Project, or within eighteen (18) months of the date his/her position with respect to his/her employment is otherwise worsened as a result of the Project. In the latter case, if the events giving rise to the claim have occurred over an extended period, the 18-month limitation shall be measured from the last such event. No benefits shall be payable for any period prior to six (6) months from the date of the filing of any claim.

(6) Nothing in this arrangement shall be construed as depriving any employee of any rights or benefits which such employee may have under existing employment or collective bargaining agreements, nor shall this arrangement be deemed a waiver of any rights of any union or of any represented employee derived from any other agreement or provision of federal, state or local law.

(7) In the event any employee covered by these arrangements is terminated or laid off as a result of the Project, he shall be granted priority of employment or reemployment to fill any vacant position within the control of the Recipient for which he is, or by training or retraining within a reasonable period, can become qualified. In the event training or retraining is required by such employment or reemployment, the Recipient shall provide or provide for such training or retraining at no cost to the employee.

(8) The Recipient will post, in a prominent and accessible place, a notice stating that the Recipient has received federal assistance under the Federal Transit statute and has agreed to comply with the provisions of 49 U.S.C., Section 5333(b). This notice shall also specify the terms and conditions set forth herein for the protection of employees. The Recipient shall maintain and keep on file all relevant books and records in sufficient detail as to provide the basic information necessary to the proper application, administration, and enforcement of these arrangements and to the proper determination of any claims arising thereunder.

(9) The Recipient(s) and the labor organization(s) referenced in the second introductory paragraph of this arrangement shall be deemed a party to these arrangements.

(10) In the event the Project is approved for assistance under the statute, the foregoing terms and conditions shall be made part of the contract of assistance between the federal government and the applicant for federal funds and between the applicant and any recipient of federal funds; provided, however, that this arrangement shall not merge into the contract of assistance, but shall be independently binding and enforceable by and upon the parties thereto, and by any covered employee or his/her representative, in accordance with its terms, nor shall any other employee protective agreement merge into this arrangement, but each shall be independently binding and enforceable by and upon the parties thereto, in accordance with its terms.

(11) This arrangement shall be binding upon the successors and assigns of the parties hereto, and no provisions, terms, or obligations herein contained shall be affected, modified, altered, or changed in any respect whatsoever by reason of the arrangements made by or for the Recipient to manage and operate the system.

Any person, enterprise, body, or agency, whether publicly - or privately-owned, which shall undertake the management, provision and/or operation of the Project services or the Recipient's transit system, or any part or portion thereof, under contractual arrangements of any form with the Recipient, its successors or assigns, shall agree to be bound by the terms of this arrangement and accept the responsibility with the Recipient for full performance of these conditions. As a condition precedent to any such contractual arrangements, the Recipient shall require such person, enterprise, body or agency to so agree.

**"MODEL AGREEMENT" PARAGRAPHS
INCLUDED IN THE "CAPITAL ASSISTANCE PROTECTIVE
ARRANGEMENT PURSUANT TO PARAGRAPH (3) THEREOF:**

(3) All rights, privileges, and benefits (including pension rights and benefits) of employees covered by this agreement (including employees having already retired) under existing collective bargaining agreements or otherwise, or under any revision or renewal thereof, shall be preserved and continued; provided, however, that such rights, privileges and benefits which are not foreclosed from further bargaining under applicable law or contract may be modified by collective bargaining and agreement by the Recipient and the union involved to substitute other rights, privileges and benefits. Unless otherwise provided, nothing in this agreement shall be deemed to restrict any rights the Recipient may otherwise have to direct the working forces and manage its business as it deemed best, in accordance with the applicable collective bargaining agreement.

(4) The collective bargaining rights of employees covered by this agreement, including the right to arbitrate labor disputes and to maintain union security and checkoff arrangements, as provided by applicable laws, policies and/or existing collective bargaining agreements, shall be preserved and continued.* Provided, however, that this provision shall not be interpreted so as to require the Recipient to retain any such rights which exist by virtue of a collective bargaining agreement after such agreement is no longer in effect.

The Recipient agrees that it will bargain collectively with the union or otherwise arrange for the continuation of collective bargaining, and that it will enter into agreement with the union or arrange for such agreements to be entered into, relative to all subjects which are or may be proper subjects of collective bargaining. If, at any time, applicable law or contracts permit

* As an addendum to this agreement, there shall be attached where applicable the arbitration or other dispute settlement procedures or arrangements provided for in the existing collective bargaining agreements or any other existing agreements between the Recipient and the Union, subject to any changes in such agreements as may be agreed upon or determined by interest arbitration proceedings.

or grant to employees covered by this agreement the right to utilize any economic measures, nothing in this agreement shall be deemed to foreclose the exercise of such right.

(6) (a) Whenever an employee, retained in service, recalled to service, or employed by the Recipient pursuant to paragraphs (5), (7) (e), or (18) hereof is placed in a worse position with respect to compensation as a result of the Project, he shall be considered a "displaced employee", and shall be paid a monthly "displacement allowance" to be determined in accordance with this paragraph. Said displacement allowance shall be paid each displaced employee during the protective period so long as the employee is unable, in the exercise of his seniority rights, to obtain a position producing compensation equal to or exceeding the compensation he received in the position from which he was displaced, adjusted to reflect subsequent general wage adjustments, including cost of living adjustments where provided for.

(b) The displacement allowance shall be a monthly allowance determined by computing the total compensation received by the employee, including vacation allowances and monthly compensation guarantees, and his total time paid for during the last twelve (12) months in which he performed compensated service more than fifty per centum of each such months, based upon his normal work schedule, immediately preceding the date of his displacement as a result of the Project, and by dividing separately the total compensation and the total time paid for by twelve, thereby producing the average monthly compensation and the average monthly time paid for. Such allowance shall be adjusted to reflect subsequent general wage adjustments, including cost of living adjustments where provided for. If the displaced employee's compensation in his current position is less in any month during his protective period than the aforesaid average compensation (adjusted to reflect subsequent general wage adjustments, including cost of living adjustments where provided for), he shall be paid the difference, less compensation for any time lost on account of voluntary absences to the extent that he is not available for service equivalent to his average monthly time, but he shall be compensated in addition thereto at the rate

of the current position for any time worked in excess of the average monthly time paid for. If a displaced employee fails to exercise his seniority rights to secure another position to which he is entitled under the then existing collective bargaining agreement, and which carries a wage rate and compensation exceeding that of the position which he elects to retain, he shall thereafter be treated, for the purposes of this paragraph, as occupying the position he elects to decline.

(c) The displacement allowance shall cease prior to the expiration of the protective period in the event of the displaced employee's resignation, death, retirement, or dismissal for cause in accordance with any labor agreement applicable to his employment.

(7) (a) Whenever any employee is laid off or otherwise deprived of employment as a result of the Project, in accordance with any collective bargaining agreement applicable to his employment, he shall be considered a "dismissed employee" and shall be paid a monthly dismissal allowance to be determined in accordance with this paragraph. Said dismissal allowance shall first be paid each dismissed employee on the thirtieth (30th) day following the day on which he is "dismissed" and shall continue during the protective period, as follows:

<u>Employee's length of service</u> <u>prior to adverse effect</u>	<u>Period of protection</u> <u>equivalent period</u>
1 day to 6 years	6 years
6 years or more	

The monthly dismissal allowance shall be equivalent to one-twelfth (1/12th) of the total compensation received by him in the last twelve (12) months of his employment in which he performed compensation service more than fifty per centum of each such month based on his normal work schedule to the date on which he was first deprived of employment as a result of the Project. Such allowance shall be adjusted to reflect subsequent general wage adjustments, including cost of living adjustments where provided for.

(b) An employee shall be regarded as deprived of employment and entitled to a dismissal allowance when the position he holds is abolished as a result of the Project, or when the position he holds is not abolished but he loses that position as a result of the exercise of seniority rights by an employee whose position is abolished as a result of the Project or as a result of the exercise of seniority rights by other employees brought about as a result of the Project, and he is unable to obtain another position, either by the exercise of his seniority rights, or through the Recipient, in accordance with subparagraph (e). In the absence of proper notice followed by an agreement or decision pursuant to paragraph (5) hereof, no employee who has been deprived of employment as a result of the Project shall be required to exercise his seniority rights to secure another position in order to qualify for a dismissal allowance hereunder.

(c) Each employee receiving a dismissal allowance shall keep the Recipient informed as to his current address and the current name and address of any other person by whom he may be regularly employed, or if he is self-employed.

(d) The dismissal allowance shall be paid to the regularly assigned incumbent of the position abolished. If the position of an employee is abolished when he is absent from service, he will be entitled to the dismissal allowance when he is available for service. The employee temporarily filling said position at the time it was abolished will be given a dismissal allowance on the basis of that position, until the regular employee is available for service, and thereafter shall revert to his previous status and will be given the protections of the agreement in said position, if any are due him.

(e) An employee receiving a dismissal allowance shall be subject to call to return to service by his former employer after being notified in accordance with the terms of the then-existing collective bargaining agreement. Prior to such call to return to work by his employer, he may be required by the Recipient to accept reasonably comparable employment for which he is physically and mentally qualified, or for which he can become qualified after a reasonable training or retraining period,

provided it does not require a change in residence or infringe upon the employment rights of other employees under then-existing collective bargaining agreements.

(f) When an employee who is receiving a dismissal allowance again commences employment in accordance with subparagraph (e) above, said allowance shall cease while he is so reemployed, and the period of time during which he is so reemployed shall be deducted from the total period for which he is entitled to receive a dismissal allowance. During the time of such reemployment, he shall be entitled to the protections of this agreement to the extent they are applicable.

(g) The dismissal allowance of any employee who is otherwise employed shall be reduced to the extent that his combined monthly earnings from such other employment or self-employment, any benefits received from any unemployment insurance law, and his dismissal allowance exceed the amount upon which his dismissal allowance is based. Such employee, or his union representative, and the Recipient shall agree upon a procedure by which the Recipient shall be kept currently informed of the earnings of such employee in employment other than with his former employer, including self-employment, and the benefits received.

(h) The dismissal allowance shall cease prior to the expiration of the protective period in the event of the failure of the employee without good cause to return to service in accordance with the applicable labor agreement, or to accept employment as provided under subparagraph (e) above, or in the event of his resignation, death, retirement, or dismissal for cause in accordance with any labor agreement applicable to his employment.

(i) A dismissed employee receiving a dismissal allowance shall actively seek and not refuse other reasonably comparable employment offered him for which he is physically and mentally qualified and does not require a change in his place of residence. Failure of the dismissed employee to comply with this obligation shall be grounds for discontinuance of his allowance; provided that said dismissal allowance shall not be discontinued

until final determination is made either by agreement between the Recipient and the employee or his representative, or by final arbitration decision rendered in accordance with paragraph (15) of this agreement that such employee did not comply with this obligation.

(8) In determining length of service of a displaced or dismissed employee for purposes of this agreement, such employee shall be given full service credits in accordance with the records and labor agreements applicable to him and he shall be given additional service credits for each month in which he receives a dismissal or displacement allowance as if he were continuing to perform services in his former position.

(9) No employee shall be entitled to either a displacement or dismissal allowance under paragraphs (6) or (7) hereof because of the abolishment of a position to which, at some future time, he could have bid, been transferred, or promoted.

(10) No employee receiving a dismissal or displacement allowance shall be deprived, during his protected period, of any rights, privileges, or benefits attaching to his employment, including, without limitation, group life insurance, hospitalization and medical care, free transportation for himself and his family, sick leave, continued status and participation under any disability or retirement program, and such other employee benefits as Railroad Retirement, Social Security, Workmen's Compensation, and unemployment compensation, as well as any other benefits to which he may be entitled under the same conditions and so long as such benefits continue to be accorded to other employees of the bargaining unit, in active service or furloughed as the case may be.

(11)(a) Any employee covered by this agreement who is retained in the service of his employer, or who is later restored to service after being entitled to receive a dismissal allowance, and who is required to change the point of his employment in order to retain or secure active employment with the Recipient in accordance with this agreement, and who is required to move his place of residence, shall be reimbursed for all expenses of

moving his household and other personal effects, for the travelling expenses for himself and members of his immediate family, including living expenses for himself and his immediate family, and for his own actual wage loss during the time necessary for such transfer and for a reasonable time thereafter, not to exceed five (5) working days. The exact extent of the responsibility of the Recipient under this paragraph, and the ways and means of transportation, shall be agreed upon in advance between the Recipient and the affected employee or his representatives.

(b) If any such employee is laid off within three (3) years after changing his point of employment in accordance with paragraph (a) hereof, and elects to move his place of residence back to his original point of employment, the Recipient shall assume the expenses, losses and costs of moving to the same extent provided in subparagraph (a) of this paragraph (11) and paragraph (12) (a) hereof.

(c) No claim for reimbursement shall be paid under the provisions of this paragraph unless such claim is presented to the Recipient within ninety (90) days after the date on which the expenses were incurred.

(d) Except as otherwise provided in subparagraph (b), changes in place of residence, subsequent to the initial changes as a result of the Project, which are not a result of the Project but grow out of the normal exercise of seniority rights, shall not be considered within the purview of this paragraph.

(12) (a) The following conditions shall apply to the extent they are applicable in each instance to any employee who is retained in the service of the employer (or who is later restored to service after being entitled to receive a dismissal allowance), who is required to change the point of his employment as a result of the Project, and is thereby required to move his place of residence.

If the employee owns his own home in the locality from which he is required to move, he shall, at his option, be reimbursed by the Recipient for any loss suffered in the sale of his home for less than its fair market value, plus conventional fees and closing costs, such loss to be paid within thirty (30) days of settlement or closing on the sale of the home. In each case, the fair market value of the home in question shall be determined, as of a date sufficiently prior to the date of the Project, so as to be unaffected thereby. The Recipient shall, in each instance, be afforded an opportunity to purchase the home at such fair market value before it is sold by the employee to any other person and to reimburse the seller for his conventional fees and closing costs.

If the employee is under a contract to purchase his home, the Recipient shall protect him against loss under such contract, and in addition, shall relieve him from any further obligation thereunder.

If the employee holds an unexpired lease of a dwelling occupied by him as his home, the Recipient shall protect him from all loss and cost in securing the cancellation of said lease.

(b) No claim for loss shall be paid under the provisions of this paragraph unless such claim is presented to the Recipient within one year after the effective date of the change in residence.

(c) Should a controversy arise in respect to the value of the home, the loss sustained in its sale, the loss under a contract for purchase, loss and cost in securing termination of a lease, or any other question in connection with these matters, it shall be decided through a joint conference between the employee, or his union, and the Recipient. In the event they are unable to agree, the dispute or controversy may be referred by the Recipient or the union to a board of competent real estate appraisers selected in the following manner: one (1) to be selected by the representatives of the employee, and one (1) by

the Recipient, and these two, if unable to agree within thirty (30) days upon the valuation, shall endeavor by agreement with ten (10) days thereafter to select a third appraiser or to agree to a method by which a third appraiser shall be selected, and failing such agreement, either party may request the State and local Board of Real Estate Commissioners to designate within ten (10) days a third appraiser, whose designation will be binding upon the parties and whose jurisdiction shall be limited to determination of the issues raised in this paragraph only. A decision of a majority of the appraisers shall be required and said decision shall be final, binding, and conclusive. The compensation and expenses of the neutral appraiser including expenses of the appraisal board, shall be borne equally by the parties to the proceedings. All other expenses shall be paid by the party incurring them, including the compensation of the appraiser selected by such party.

(d) Except as otherwise provided in paragraph (11)(b) hereof, changes in place of residence, subsequent to the initial changes as a result of the Project, which are not a result of the Project but grow out of the normal exercise of seniority rights, shall not be considered within the purview of this paragraph.

(e) "Change in residence" means transfer to a work location which is either (A) outside a radius of twenty (20) miles of the employee's former work location and farther from his residence than was his former work location, or (B) is more than thirty (30) normal highway route miles from his residence and also farther from his residence than was his former work location.

(13) A dismissed employee entitled to protection under this agreement may, at his option within twenty-one (21) days of his dismissal, resign and (in lieu of all other benefits and protections provided in this agreement) accept a lump sum payment computed in accordance with section (9) of the Washington Job Protection Agreement of May 1936:

<u>Length of Service</u>						<u>Separation Allowance</u>	
1	year	and	less	than	2 years	3 months' pay	
2	"	"	"	"	3 "	6 "	"
3	"	"	"	"	5 "	9 "	"
5	"	"	"	"	10 "	12 "	"
10	"	"	"	"	15 "	12 "	"
15	"	"	over			12 "	"

In the case of an employee with less than one year's service, five days' pay, computed by multiplying by 5 the normal daily earnings (including regularly scheduled overtime, but excluding other overtime payments) received by the employee in the position last occupied, for each month in which he performed service, will be paid as the lump sum.

(a) Length of service shall be computed as provided in Section 7(b) of the Washington Job Protection Agreement, as follows:

For the purposes of this agreement, the length of service of the employee shall be determined from the date he last acquired an employment status with the employing carrier and he shall be given credit for one month's service for each month in which he performed any service (in any capacity whatsoever) and twelve (12) such months shall be credited as one year's service. The employment status of an employee shall not be interrupted by furlough in instances where the employee has a right to and does return to service when called. In determining length of service of an employee acting as an officer or other official representative of an employee organization, he will be given credit for performing service while so engaged on leave of absence from the service of a carrier.

(b) One month's pay shall be computed by multiplying by 30 the normal daily earnings (including regularly scheduled overtime, but excluding other overtime payments) received by the employee in the position last occupied prior to time of his dismissal as a result of the Project.

(14) Whenever used herein, unless the context requires otherwise, the term "protective period" means that period of time during which a displaced or dismissed employee is to be provided protection hereunder and extends from the date on which an employee is displaced or dismissed to the expiration of six (6) years therefrom, provided, however, that the protective period for any particular employee during which he is entitled to receive the benefits of these provisions shall not continue for a longer period following the date he was displaced or dismissed than the employee's length of service, as shown by the records and labor agreements applicable to his employment prior to the date of his displacement or his dismissal.

(16) Nothing in this agreement shall be construed as depriving any employee of any rights or benefits which such employee may have under any existing job security or other protective conditions or arrangements by collective bargaining agreement or law where applicable, including P.L. 93-236, enacted January 2, 1974; provided that there shall be no duplication of benefits to any employees, and, provided further, that any benefit under the agreement shall be construed to include the conditions, responsibilities, and obligations accompanying such benefits.

(17) The Recipient shall be financially responsible for the application of these conditions and will make the necessary arrangements so that any employee affected as a result of the Project may file a claim through his union representative with the Recipient within sixty (60) days of the date he is terminated or laid off as a result of the Project, or within eighteen (18) months of the date his position with respect to his employment is otherwise worsened as a result of the Project; provided, in the latter case, if the events giving rise to the claim have occurred over an extended period, the 18-month limitation shall be measured from the last such event; provided, further, that no benefits shall be payable for any period prior to six (6) months from the date of the filing of the claim. Unless such claims are filed with the Recipient with said time limitations, the Recipient shall thereafter be relieved of all liabilities and obligations related to said claims. The Recipient will fully

honor the claim, making appropriate payments, or will give notice to the claimant and his representative of the basis for denying or modifying such claim, giving reasons therefor. In the event the Recipient fails to honor such claim, the Union may invoke the following procedures for further joint investigation of the claim by giving notice in writing of its desire to pursue such procedures. Within ten (10) days from the receipt of such notice, the parties shall exchange such factual material as may be requested of them relevant to the disposition of the claim and shall jointly take such steps as may be necessary or desirable to obtain from any third party such additional factual materials as may be relevant. In the event the claim is so rejected by the Recipient, the claim may be processed to arbitration as hereinabove provided by paragraph (15). Prior to the arbitration hearing, the parties shall exchange a list of intended witnesses. In conjunction with such proceedings, the impartial arbitrator shall have the power to subpoena witnesses upon the request of any party and to compel the production of documents and other information denied in the pre-arbitration period which is relevant to the disposition of the claim.

Nothing included herein as an obligation of the Recipient shall be construed to relieve any other urban mass transportation employer of the employees covered hereby of any obligations which it has under existing collective bargaining agreements, including but not limited to obligations arising from the benefits referred to in paragraph (10) hereof, nor make any such employer a third-party beneficiary of the Recipient's obligations contained herein, nor deprive the Recipient of any right of subrogation.

(18) During the employee's protective period, a dismissed employee shall, if he so requests, in writing, be granted priority of employment to fill any vacant position within the jurisdiction and control of the Recipient, reasonably comparable to that which he held when dismissed, for which he is, or by training or retraining can become, qualified; not, however, in contravention of collective bargaining agreements related thereto. In the event such employee requests such training or re-training to fill such vacant position, the Recipient shall provide for such training or re-training at no cost to the

employee. The employee shall be paid the salary or hourly rate provided for in the applicable collective bargaining agreement for such position, plus any displacement allowance to which he may be otherwise entitled. If such dismissed employee who has made such request fails, without good cause, within ten (10) days to accept an offer of a position comparable to that which he held when dismissed for which he is qualified, or for which he has satisfactorily completed such training, he shall, effective at the expiration of such ten-day period, forfeit all rights and benefits under this agreement.

As between employees who request employment pursuant to this paragraph, the following order where applicable shall prevail in hiring such employees:

(a) Employees in the craft or class of the vacancy shall be given priority over employees without seniority in such craft or class;

(b) As between employees having seniority in the craft or class of the vacancy, the senior employees, based upon their service in that craft or class, as shown on the appropriate seniority roster, shall prevail over junior employees;

(c) As between employees not having seniority in the craft or class of the vacancy, the senior employees, based upon their service in the crafts or classes in which they do have seniority as shown on the appropriate seniority rosters, shall prevail over junior employees.

(20) The employees covered by this agreement shall continue to receive any applicable coverage under Social Security, Railroad Retirement, Workmen's Compensation, unemployment compensation, and the like. In no event shall these benefits be worsened as a result of the Project.

(21) In the event any provision of this agreement is held to be invalid, or otherwise unenforceable under the federal, State, or local law, in the context of a particular Project, the remaining provisions of this agreement shall not be affected and the invalid or unenforceable provision shall be renegotiated by

the Recipient and the interested union representatives of the employees involved for purpose of adequate replacement under 5333(b) of the Act. If such negotiation shall not result in mutually satisfactory agreement, any party may invoke the jurisdiction of the Secretary of Labor to determine substitute fair and equitable employee protective arrangements for application only to the particular Project, which shall be incorporated in this agreement only as applied to that Project, and any other appropriate action, remedy, or relief.

(25) If any employer of the employees covered by this agreement shall have rearranged or adjusted its forces in anticipation of the Project, with the effect of depriving an employee of benefits to which he should be entitled under this agreement, the provisions of this agreement shall apply to such employee as of the date when he was so affected.

[Updated 9-10-98]

OPERATING ASSISTANCE PROTECTIVE ARRANGEMENT
PURSUANT TO SECTION 5333 (b)
OF TITLE 49 OF THE U.S. CODE, CHAPTER 53
For [Name of Recipient] and [Name of Union]
[Date of Certification]
FTA GRANT
[- -]

The following terms and conditions shall apply and shall be specified in any contract governing federal operating assistance to the applicant and any recipients referenced in the grant application ("Recipient"):

(1) The term "Project", as used in this arrangement, shall not be limited to the particular facility, service, or operation assisted by federal funds, but shall include any changes, whether organizational, operational, technological, or otherwise, which are a result of the assistance provided. The phrase "as a result of the Project" shall, when used in this arrangement, include events occurring in anticipation of, during, and subsequent to the Project and any program of efficiencies or economies related thereto; provided, however, that volume rises and falls of business, or changes in volume and character of employment brought about solely by causes other than the Project (including any economies or efficiencies unrelated to the Project) are not within the purview of this arrangement.

(2) The Project, as defined in paragraph (1) shall be performed and carried out in full compliance with the protective conditions described herein.

(3) All rights, privileges, and benefits (including pension rights and benefits) of employees covered by this arrangement (including employees having already retired) under existing collective bargaining agreements or otherwise, or under any revision or renewal thereof, shall be preserved and continued; provided, however, that such rights, privileges and benefits which are not foreclosed from further bargaining under applicable law or contract may be modified by collective bargaining and agreement by the Recipient and the union involved to substitute other rights, privileges and benefits. Unless otherwise

provided, nothing in this arrangement shall be deemed to restrict any rights the Recipient may otherwise have to direct the working forces and manage its business as it deems best, in accordance with the applicable collective bargaining agreement.

(4) The collective bargaining rights of employees covered by this arrangement, including the right to arbitrate labor disputes and to maintain union security and checkoff arrangements, as provided by applicable laws, policies and/or existing collective bargaining agreements, shall be preserved and continued.* Provided, however, that this provision shall not be interpreted so as to require the Recipient to retain any such rights which exist by virtue of a collective bargaining agreement after such agreement is no longer in effect.

The Recipient agrees that it will bargain collectively with the union or otherwise arrange for the continuation of collective bargaining, and that it will enter into agreement with the union or arrange for such agreements to be entered into, relative to all subjects which are or may be proper subjects of collective bargaining. If, at any time, applicable law or contracts permit or grant to employees covered by this arrangement the right to utilize any economic measures, nothing in this arrangement shall be deemed to foreclose the exercise of such right.

(5) (a) In the event the Recipient contemplates any change in the organization or operation of its system which may result in the dismissal or displacement of employees, or rearrangement of the working forces covered by this arrangement, as a result of the Project, the Recipient shall do so only in accordance with the provisions of subparagraph (b) hereof. Provided, however, that changes which are not a result of the Project, but which grow out of the normal exercise of seniority rights occasioned by

* As an addendum to this arrangement, there shall be attached where applicable the arbitration or other dispute settlement procedures or arrangements provided for in the existing collective bargaining agreements or any other existing agreements between the Recipient and the Union, subject to any changes in such agreements as may be agreed upon or determined by interest arbitration proceedings.

seasonal or other normal schedule changes and regular picking procedures under the applicable collective bargaining agreement, shall not be considered within the purview of this paragraph.

(b) The Recipient shall give to the unions representing the employees affected thereby, at least sixty (60) days' written notice of each proposed change, which may result in the dismissal or displacement of such employees or rearrangement of the working forces as a result of the Project, by sending certified mail notice to the union representatives of such employees. Such notice shall contain a full and adequate statement of the proposed changes, including an estimate of the number of employees affected by the intended changes, and the number and classifications of any jobs in the Recipient's employment available to be filled by such affected employees.

At the request of either the Recipient or the representatives of the affected employees, negotiations for the purpose of reaching agreement with respect to application of the terms and conditions of this arrangement shall commence immediately. These negotiations shall include determining the selection of forces from among the employees of other urban mass transportation employers who may be affected as a result of the Project, to establish which such employees shall be offered employment with the Recipient for which they are qualified or can be trained; not, however, in contravention of collective bargaining agreements relating thereto. If no agreement is reached within twenty (20) days from the commencement of negotiations, any party to the dispute may submit it to arbitration in accordance with the procedures contained in paragraph (15) hereof. In any such arbitration, final decision must be reached within sixty (60) days after selection or appointment of the neutral arbitrator. In any such arbitration, the terms of this arrangement are to be interpreted and applied in favor of providing employee projections and benefits no less than those established pursuant to §11347 of Title 49 of the U.S. Code.

(6) (a) Whenever an employee, retained in service, recalled to service, or employed by the Recipient pursuant to paragraphs (5), (7) (e), or (18) hereof is placed in a worse position with respect to compensation as a result of the Project, he shall be

considered a "displaced employee", and shall be paid a monthly "displacement allowance" to be determined in accordance with this paragraph. Said displacement allowance shall be paid each displaced employee during the protective period following the date on which he is first "displaced", and shall continue during the protective period so long as the employee is unable, in the exercise of his seniority rights, to obtain a position producing compensation equal to or exceeding the compensation he received in the position from which he was displaced, adjusted to reflect subsequent general wage adjustments, including cost of living adjustments where provided for.

(b) The displacement allowance shall be a monthly allowance determined by computing the total compensation received by the employee, including vacation allowances and monthly compensation guarantees, and his total time paid for during the last twelve (12) months in which he performed compensated service more than fifty per centum of each such months, based upon his normal work schedule, immediately preceding the date of his displacement as a result of the Project, and by dividing separately the total compensation and the total time paid for by twelve, thereby producing the average monthly compensation and the average monthly time paid for. Such allowance shall be adjusted to reflect subsequent general wage adjustments, including cost of living adjustments where provided for. If the displaced employee's compensation in his current position is less in any month during his protective period than the aforesaid average compensation (adjusted to reflect subsequent general wage adjustments, including cost of living adjustments where provided for), he shall be paid the difference, less compensation for any time lost on account of voluntary absences to the extent that he is not available for service equivalent to his average monthly time, but he shall be compensated in addition thereto at the rate of the current position for any time worked in excess of the average monthly time paid for. If a displaced employee fails to exercise his seniority rights to secure another position to which he is entitled under the then existing collective bargaining agreement, and which carries a wage rate and compensation exceeding that of the position which he elects to retain, he shall thereafter be treated, for the purposes of this paragraph, as occupying the position he elects to decline.

(c) The displacement allowance shall cease prior to the expiration of the protective period in the event of the displaced employee's resignation, death, retirement, or dismissal for cause in accordance with any labor agreement applicable to his employment.

(7) (a) Whenever any employee is laid off or otherwise deprived of employment as a result of the Project, in accordance with any collective bargaining agreement applicable to his employment, he shall be considered a "dismissed employee" and shall be paid a monthly dismissal allowance to be determined in accordance with this paragraph. Said dismissal allowance shall first be paid each dismissed employee on the thirtieth (30th) day following the day on which he is "dismissed" and shall continue during the protective period, as follow:

<u>Employee's length of service</u> <u>prior to adverse effect</u>	<u>Period of protection</u>
1 day to 6 years	equivalent period
6 years or more	6 years

The monthly dismissal allowance shall be equivalent to one-twelfth (1/12th) of the total compensation received by him in the last twelve (12) months of his employment in which he performed compensation service more than fifty per centum of each such months based on his normal work schedule to the date on which he was first deprived of employment as a result of the Project. Such allowance shall be adjusted to reflect subsequent general wage adjustments, including cost of living adjustments where provided for.

(b) An employee shall be regarded as deprived of employment and entitled to a dismissal allowance when the position he holds is abolished as a result of the Project, or when the position he holds is not abolished but he loses that position as a result of the exercise of seniority rights by an employee whose position is abolished as a result of the Project or as a result of the exercise of seniority rights by other employees brought about as a result of the Project, and he is unable to obtain another position, either by the exercise of his seniority rights, or through the Recipient, in accordance with subparagraph (e). In the absence of proper notice followed by an agreement or decision

pursuant to paragraph (5) hereof, no employee who has been deprived of employment as a result of the Project shall be required to exercise his seniority rights to secure another position in order to qualify for a dismissal allowance hereunder.

(c) Each employee receiving a dismissal allowance shall keep the Recipient informed as to his current address and the current name and address of any other person by whom he may be regularly employed, or if he is self-employed.

(d) The dismissal allowance shall be paid to the regularly assigned incumbent of the position abolished. If the position of an employee is abolished when he is absent from service, he will be entitled to the dismissal allowance when he is available for service. The employee temporarily filling said position at the time it was abolished will be given a dismissal allowance on the basis of that position, until the regular employee is available for service, and thereafter shall revert to his previous status and will be given the protections of the arrangement in said position, if any are due him.

(e) An employee receiving a dismissal allowance shall be subject to call to return to service by his former employer after being notified in accordance with the terms of the then-existing collective bargaining agreement. Prior to such call to return to work by his employer, he may be required by the Recipient to accept reasonably comparable employment for which he is physically and mentally qualified, or for which he can become qualified after a reasonable training or retraining period, provided it does not require a change in residence or infringe upon the employment rights of other employees under then-existing collective bargaining agreements.

(f) When an employee who is receiving a dismissal allowance again commences employment in accordance with subparagraph (e) above, said allowance shall cease while he is so reemployed, and the period of time during which he is so reemployed shall be deducted from the total period for which he is entitled to receive a dismissal allowance. During the time of such reemployment, he shall be entitled to the protections of this arrangement to the extent they are applicable.

(g) The dismissal allowance of any employee who is otherwise employed shall be reduced to the extent that his combined monthly earnings from such other employment or self-employment, any benefits received from any unemployment insurance law, and his dismissal allowance exceed the amount upon which his dismissal allowance is based. Such employee, or his union representative, and the Recipient shall agree upon a procedure by which the Recipient shall be kept currently informed of the earnings of such employee in employment other than with his former employer, including self-employment, and the benefits received.

(h) The dismissal allowance shall cease prior to the expiration of the protective period in the event of the failure of the employee without good cause to return to service in accordance with the applicable labor agreement, or to accept employment as provided under subparagraph (e) above, or in the event of his resignation, death, retirement, or dismissal for cause in accordance with any labor agreement applicable to his employment.

(i) A dismissed employee receiving a dismissal allowance shall actively seek and not refuse other reasonably comparable employment offered him for which he is physically and mentally qualified and does not require a change in his place of residence. Failure of the dismissed employee to comply with this obligation shall be grounds for discontinuance of his allowance; provided that said dismissal allowance shall not be discontinued until final determination is made either by agreement between the Recipient and the employee or his representative, or by final arbitration decision rendered in accordance with paragraph (15) of this arrangement that such employee did not comply with this obligation.

(8) In determining length of service of a displaced or dismissed employee for purposes of this arrangement, such employee shall be given full service credits in accordance with the records and labor agreements applicable to him and he shall be given additional service credits for each month in which he receives a dismissal or displacement allowance as if he were continuing to perform services in his former position.

(9) No employee shall be entitled to either a displacement or dismissal allowance under paragraphs (6) or (7) hereof because of the abolishment of a position to which, at some future time, he could have bid, been transferred, or promoted.

(10) No employee receiving a dismissal or displacement allowance shall be deprived, during his protected period, of any rights, privileges, or benefits attaching to his employment, including, without limitation, group life insurance, hospitalization and medical care, free transportation for himself and his family, sick leave, continued status and participation under any disability or retirement program, and such other employee benefits as Railroad Retirement, Social Security, Workmen's Compensation, and unemployment compensation, as well as any other benefits to which he may be entitled under the same conditions and so long as such benefits continue to be accorded to other employees of the bargaining unit, in active service or furloughed as the case may be.

(11) (a) Any employee covered by this arrangement who is retained in the service of his employer, or who is later restored to service after being entitled to receive a dismissal allowance, and who is required to change the point of his employment in order to retain or secure active employment with the Recipient in accordance with this arrangement, and who is required to move his place of residence, shall be reimbursed for all expenses of moving his household and other personal effects, for the traveling expenses for himself and members of his immediate family, including living expenses for himself and his immediate family, and for his own actual wage loss during the time necessary for such transfer and for a reasonable time thereafter, not to exceed five (5) working days. The exact extent of the responsibility of the Recipient under this paragraph, and the ways and means of transportation, shall be agreed upon in advance between the Recipient and the affected employee or his representatives.

(b) If any such employee is laid off within three (3) years after changing his point of employment in accordance with paragraph (a) hereof, and elects to move his place of residence back to his original point of employment, the Recipient shall assume the expenses, losses and costs of moving to the same

extent provided in subparagraph (a) of this paragraph (11) and paragraph (12)(a) hereof.

(c) No claim for reimbursement shall be paid under the provisions of this paragraph unless such claim is presented to the Recipient within ninety (90) days after the date on which the expenses were incurred.

(d) Except as otherwise provided in subparagraph (b), changes in place of residence, subsequent to the initial changes as a result of the Project, which are not a result of the Project but grow out of the normal exercise of seniority rights, shall not be considered within the purview of this paragraph.

(12)(a) The following conditions shall apply to the extent they are applicable in each instance to any employee who is retained in the service of the employer (or who is later restored to service after being entitled to receive a dismissal allowance), who is required to change the point of his employment as a result of the Project, and is thereby required to move his place of residence.

If the employee owns his own home in the locality from which he is required to move, he shall, at his option, be reimbursed by the Recipient for any loss suffered in the sale of his home for less than its fair market value, plus conventional fees and closing costs, such loss to be paid within thirty (30) days of settlement or closing on the sale of the home. In each case, the fair market value of the home in question shall be determined, as of a date sufficiently prior to the date of the Project, so as to be unaffected thereby. The Recipient shall, in each instance, be afforded an opportunity to purchase the home at such fair market value before it is sold by the employee to any other person and to reimburse the seller for his conventional fees and closing costs.

If the employee is under a contract to purchase his home, the Recipient shall protect him against loss under such contract, and in addition, shall relieve him from any further obligation thereunder.

If the employee holds an unexpired lease of a dwelling occupied by him as his home, the Recipient shall protect him from all loss and cost in securing the cancellation of said lease.

(b) No claim for loss shall be paid under the provisions of this paragraph unless such claim is presented to the Recipient within one year after the effective date of the change in residence.

(c) Should a controversy arise in respect to the value of the home, the loss sustained in its sale, the loss under a contract for purchase, loss and cost in securing termination of a lease, or any other question in connection with these matters, it shall be decided through a joint conference between the employee, or his union, and the Recipient. In the event they are unable to agree, the dispute or controversy may be referred by the Recipient or the union to a board of competent real estate appraisers selected in the following manner: one (1) to be selected by the representatives of the employee, and one (1) by the Recipient, and these two, if unable to agree within thirty (30) days upon the valuation, shall endeavor by agreement within ten (10) days thereafter to select a third appraiser or to agree to a method by which a third appraiser shall be selected, and failing such agreement, either party may request the State or local Board of Real Estate Commissioners to designate within ten (10) days a third appraiser, whose designation will be binding upon the parties and whose jurisdiction shall be limited to determination of the issues raised in this paragraph only. A decision of a majority of the appraisers shall be required and said decision shall be final, binding, and conclusive. The compensation and expenses of the neutral appraiser including expenses of the appraisal board, shall be borne equally by the parties to the proceedings. All other expenses shall be paid by the party incurring them, including the compensation of the appraiser selected by such party.

(d) Except as otherwise provided in paragraph (11) (b) hereof, changes in place of residence, subsequent to the initial changes as a result of the Project, which are not a result of the Project but grow out of the normal exercise of seniority rights, shall not be considered within the purview of this paragraph.

(e) "Change in residence" means transfer to a work location which is either (A) outside a radius of twenty (20) miles of the employee's former work location and farther from his residence than was his former work location, or (B) is more than thirty (30) normal highway route miles from his residence and also farther from his residence than was his former work location.

(13) A dismissed employee entitled to protection under this arrangement may, at his option within twenty-one (21) days of his dismissal, resign and (in lieu of all other benefits and protections provided in this arrangement) accept a lump sum payment computed in accordance with section (9) of the Washington Job Protection Agreement of May 1936:

<u>Length of Service</u>						<u>Separation Allowance</u>	
1	year	and	less	than	2 years	3	months' pay
2	"	"	"	"	3 "	6	" "
3	"	"	"	"	5 "	9	" "
5	"	"	"	"	10 "	12	" "
10	"	"	"	"	15 "	12	" "
15	"	"	over			12	" "

In the case of an employee with less than one year's service, five days' pay, computed by multiplying by 5 the normal daily earnings (including regularly scheduled overtime, but excluding other overtime payments) received by the employee in the position last occupied, for each month in which he performed service, will be paid as the lump sum.

(a) Length of service shall be computed as provided in Section 7(b) of the Washington Job Protection Agreement, as follows:

For the purposes of this arrangement, the length of service of the employee shall be determined from the date he last acquired an employment status with the employing carrier and he shall be given credit for one month's service for each month in which he performed any service (in any capacity whatsoever) and twelve (12) such months shall be credited as one year's service.

The employment status of an employee shall not be interrupted by furlough in instances where the employee has a right to and does return to service when called. In determining length of service of an employee acting as an officer or other official representative of an employee organization, he will be given credit for performing service while so engaged on leave of absence from the service of a carrier.

(b) One month's pay shall be computed by multiplying by 30 the normal daily earnings (including regularly scheduled overtime, but excluding other overtime payments) received by the employee in the position last occupied prior to time of his dismissal as a result of the Project.

(14) Whenever used herein, unless the context requires otherwise, the term "protective period" means that period of time during which a displaced or dismissed employee is to be provided protection hereunder and extends from the date on which an employee is displaced or dismissed to the expiration of six (6) years therefrom, provided, however, that the protective period for any particular employee during which he is entitled to receive the benefits of these provisions shall not continue for a longer period following the date he was displaced or dismissed than the employee's length of service, as shown by the records and labor agreements applicable to his employment prior to the date of his displacement or his dismissal.

(15) (a) In the event there arises any labor dispute with respect to the protection afforded by this arrangement, or with respect to the interpretation, application or enforcement of the provisions of this arrangement, not otherwise governed by Section (12) (c) hereof, the Labor-Management Relations Act, as amended, Railway Labor Act, as amended, or by impasse resolution provisions in a collective bargaining or protective arrangement involving the Recipient and the Union, which cannot be settled by the parties thereto within thirty (30) days after the dispute or controversy arises, it may be submitted at the written request of the Recipient or the union to a board of arbitration to be selected as hereinafter provided. One arbitrator is to be chosen by each interested party, and the arbitrators thus selected shall endeavor to select a neutral arbitrator who shall serve as chairman. Each party shall appoint its arbitrator within five

(5) days after notice of submission to arbitration has been given. Should the arbitrators selected by the parties be unable to agree upon the selection of the neutral arbitrator within ten (10) days after notice of submission to arbitration has been given, then the arbitrator selected by any party may request the American Arbitration Association to furnish, from among members of the National Academy of Arbitrators who are then available to serve, five (5) arbitrators from which the neutral arbitrator shall be selected. The arbitrators appointed by the parties shall, within five (5) days after the receipt of such list, determine by lot the order of elimination and thereafter each shall, in that order, alternately eliminate one name until only one name remains. The remaining person on the list shall be the neutral arbitrator. If any party fails to select its arbitrator within the prescribed time limit, the highest officer of the Union or of the Recipient or their nominees, as the case may be, shall be deemed to be the selected arbitrator, and the board of arbitration shall then function and its decision shall have the same force and effect as though all parties had selected their arbitrators. Unless otherwise provided, in the case of arbitration proceedings, under paragraph (5) of this arrangement, the board of arbitration shall meet within fifteen (15) days after selection or appointment of the neutral arbitrator and shall render its decision within forty-five (45) days after the hearing of the dispute has been concluded and the record closed. The decision by majority vote of the arbitration board shall be final and binding as the decision of the arbitration board, except as provided in subparagraph (b) below. All the conditions of the arrangement shall continue to be effective during the arbitration proceedings.

(b) In the case of any labor dispute otherwise covered by subparagraph (a) but involving multiple parties, or employees of urban mass transportation employers other than those of the Recipient, which cannot be settled by collective bargaining, such labor dispute may be submitted, at the written request of any of the parties to this arrangement involved in the dispute, to a single arbitrator who is mutually acceptable to the parties. Failing mutual agreement within ten (10) days as to the selection of an arbitrator, any of the parties involving may request the American Arbitration Association to furnish an impartial arbitrator from among members of the National Academy of

Arbitrators who is then available to serve. Unless otherwise provided, in the case of arbitration proceedings under paragraph (5) of this arrangement, the arbitrator thus appointed shall convene the hearing within fifteen (15) days after his selection or appointment and shall render his decision within forty-five (45) days after the hearing of the dispute or controversy has been concluded and the record closed. The decision of the neutral arbitrator shall be conclusive upon all parties to the dispute. All the conditions of the arrangement shall continue to be effective during the arbitration proceeding. Authority of the arbitrator shall be limited to the determination of the dispute arising out of the interpretation, application, or operation of the provisions of this arrangement. The arbitrator shall not have any authority whatsoever to alter, amend, or modify any of the provisions of any collective bargaining agreement.

(c) The compensation and expenses of the neutral arbitrator, and any other jointly incurred expenses, shall be borne equally by the parties to the proceeding and all other expenses shall be paid by the party incurring them.

(d) In the event of any dispute as to whether or not a particular employee was affected by the Project, it shall be his obligation to identify the Project and specify the pertinent facts of the Project relied upon. It shall then be the Recipient's burden to prove that factors other than the Project affected the employee. The claiming employee shall prevail if it is established that the Project had an effect upon the employee even if other factors may also have affected the employee (Hodgson's Affidavit in Civil Action No. 825-71).

(e) Nothing in this arrangement shall be construed to enlarge or limit the right of any party to utilize, upon the expiration of any collective bargaining agreement or otherwise, any economic measures which are not inconsistent or in conflict with applicable laws or this arrangement.

(16) Nothing in this arrangement shall be construed as depriving any employee of any rights or benefits which such employee may have under any existing job security or other protective conditions or arrangements by collective bargaining agreement or law where applicable, including P.L. 93-236, enacted

January 2, 1974; provided that there shall be no duplication of benefits to any employees, and, provided further, that any benefit under the arrangement shall be construed to include the conditions, responsibilities, and obligations accompanying such benefits.

(17) The Recipient shall be financially responsible for the application of these conditions and will make the necessary arrangements so that any employee affected as a result of the Project may file a claim through his union representative with the Recipient within sixty (60) days of the date he is terminated or laid off as a result of the Project, or within eighteen (18) months of the date his position with respect to his employment is otherwise worsened as a result of the Project; provided, in the latter case, if the events giving rise to the claim have occurred over an extended period, the 18-month limitation shall be measured from the last such event; provided, further, that no benefits shall be payable for any period prior to six (6) months from the date of the filing of the claim. Unless such claims are filed with the Recipient within said time limitations, the Recipient shall thereafter be relieved of all liabilities and obligations related to said claims. The Recipient will fully honor the claim, making appropriate payments, or will give notice to the claimant and his representative of the basis for denying or modifying such claim, giving reasons therefor. In the event the Recipient fails to honor such claim, the Union may invoke the following procedures for further joint investigation of the claim by giving notice in writing of its desire to pursue such procedures. Within ten (10) days from the receipt of such notice, the parties shall exchange such factual material as may be requested of them relevant to the disposition of the claim and shall jointly take such steps as may be necessary or desirable to obtain from any third party such additional factual materials as may be relevant. In the event the claim is so rejected by the Recipient, the claim may be processed to arbitration as herein above provided by paragraph (15). Prior to the arbitration hearing, the parties shall exchange a list of intended witnesses. In conjunction with such proceedings, the impartial arbitrator shall have the power to subpoena witnesses upon the request of any party and to compel the production of documents and other information denied in the pre-arbitration period which is relevant to the disposition of the claim.

Nothing included herein as an obligation of the Recipient shall be construed to relieve any other urban mass transportation employer of the employees covered hereby of any obligations which it has under existing collective bargaining agreements, including but not limited to obligations arising from the benefits referred to in paragraph (10) hereof, nor make any such employer a third-party beneficiary of the Recipient's obligations contained herein, nor deprive the Recipient of any right of subrogation.

(18) During the employee's protective period, a dismissed employee shall, if he so requests, in writing, be granted priority of employment to fill any vacant position within the jurisdiction and control of the Recipient reasonably comparable to that which he held when dismissed, for which he is, or by training or retraining can become, qualified; not, however, in contravention of collective bargaining agreements related thereto. In the event such employee requests such training or re-training to fill such vacant position, the Recipient shall provide for such training or re-training at no cost to the employee. The employee shall be paid the salary or hourly rate provided for in the applicable collective bargaining agreement for such position, plus any displacement allowance to which he may be otherwise entitled. If such dismissed employee who has made such request fails, without good cause, within ten (10) days to accept an offer of a position comparable to that which he held when dismissed for which he is qualified, or for which he has satisfactorily completed such training, he shall, effective at the expiration of such ten-day period, forfeit all rights and benefits under this arrangement.

As between employees who request employment pursuant to this paragraph, the following order where applicable shall prevail in hiring such employees:

(a) Employees in the craft or class of the vacancy shall be given priority over employees without seniority in such craft or class;

(b) As between employees having seniority in the craft or class of the vacancy, the senior employees, based upon their service in that craft or class, as shown on the appropriate

seniority roster, shall prevail over junior employees;

(c) As between employees not having seniority in the craft or class of the vacancy, the senior employees, based upon their service in the crafts or classes in which they do have seniority as shown on the appropriate seniority rosters, shall prevail over junior employees.

(19) This arrangement shall be binding upon the successors and assigns of the parties hereto, and no provisions, terms, or obligations herein contained shall be affected, modified, altered, or changed in any respect whatsoever by reason of the arrangements made by or for the Recipient to manage and operate the system.

Any person, enterprise, body, or agency, whether publicly - or privately-owned, which shall undertake the management, provision and/or operation of the Project services or the Recipient's transit system, or any part or portion thereof, under contractual arrangements of any form with the Recipient, its successors or assigns, shall agree to be bound by the terms of this arrangement and accept the responsibility with the Recipient for full performance of these conditions. As a condition precedent to any such contractual arrangements, the Recipient shall require such person, enterprise, body or agency to so agree.

(20) The employees covered by this arrangement shall continue to receive any applicable coverage under Social Security, Railroad Retirement, Workmen's Compensation, unemployment compensation, and the like. In no event shall these benefits be worsened as a result of the Project.

(21) In the event any provision of this arrangement is held to be invalid, or otherwise unenforceable under the federal, State, or local law, in the context of a particular Project, the remaining provisions of this arrangement shall not be affected and the invalid or unenforceable provision shall be renegotiated by the Recipient and the interested union representatives of the employees involved for purpose of adequate replacement under Section 5333(b). If such negotiation shall not result in mutually satisfactory agreement, any party may invoke the jurisdiction of the Secretary of Labor to determine substitute

fair and equitable employee protective arrangements for application only to the particular Project, which shall be incorporated in this arrangement only as applied to that Project, and any other appropriate action, remedy, or relief.

(22) The designated Recipient, as hereinabove defined, signatory hereto, shall be the sole provider of mass transportation services to the Project and such services shall be provided exclusively by employees of the Recipient covered by this agreement, in accordance with this agreement and any applicable collective bargaining agreement. The parties recognize, however, that certain of the recipients signatory hereto, providing urban mass transportation services, have heretofore provided such services through contracts by purchase, leasing, or other arrangements and hereby agree that such practices may continue. Whenever any other employer provides such services through contracts by purchase, leasing, or other arrangements with the Recipient, or on its behalf, the provisions of this agreement shall apply.

(23) An employee covered by this arrangement, who is not dismissed, displaced, or otherwise worsened in his position with regard to his employment as a result of the Project, but who is dismissed, displaced, or otherwise worsened solely because of the total or partial termination of the Project or exhaustion of Project funding, shall not be deemed eligible for a dismissal or displacement allowance within the meaning of paragraphs (6) and arrangement.

(24) If any employer of the employees covered by this arrangement shall have rearranged or adjusted its forces in anticipation of the Project, with the effect of depriving an employee of benefits to which he should be entitled under this arrangement, the provisions of this arrangement shall apply to such employee as of the date when he was so affected.

(25) In the context of a particular Project, the Recipient and any union which is the collective bargaining representative of urban mass transportation employees in the service area of the Recipient, and who may be affected by the assistance to the Recipient within the meaning of 49 U.S.C.A. 1609(c), shall be deemed a party to this arrangement as applied to the Project. In

the event of any disagreement that a labor organization should be a party to this arrangement, as applied to the Project, then the dispute shall be determined by the Secretary of Labor.

(26) In the event any project to which this arrangement applies is approved for assistance, the foregoing terms and conditions shall be made part of the contract of assistance between the federal government and the applicant for federal funds and between the applicant and any recipient of federal funds; provided, however, that this arrangement shall not merge into the contract of assistance but shall be independently binding and enforceable by and upon the parties thereto, in accordance with its terms, nor shall any other employee protective arrangement nor any collective bargaining agreement merge into this agreement, but each shall be independently binding and enforceable by and upon the parties thereto, in accordance with its terms.