Management Audit of the

Rhode Island Public Transit Authority

FUNCTIONAL AREA PERFORMANCE AUDIT

Prepared for the

Rhode Island State Budget Office

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EXECUTIVE SUMMARY

The State Budget Office is conducting a Management Performance Audit (MPA) of the Rhode Island Public Transit Authority (RIPTA) to evaluate the efficiency and effectiveness of the overall performance of the transit system under review and in turn to identify actions that could be undertaken to achieve improvements. One of the key analysis tasks in this MPA is a comprehensive review of each functional unit of RIPTA.

Among the specific issues examined in the MPA process are the findings of the peer group review where certain areas of RIPTA's performance were judged to be very favorable and others would benefit from further review. Examples where RIPTA's performance were judged very favorable include:

- RIPTA ranks number one in operating revenue
- RIPTA ranks number two in ridership total and its ridership is 24.6% higher than the peer group average
- RIPTA performs better than the peer group average in all five measures related to maintenance performance
- Out of a total of 27 combination performances indicators, RIPTA had 15 ranked above its peers (55%) and 12 ranked below its peers (44%)

In addition, RIPTA's performance with respect to Financial, Per Capita and G & A (General and Administrative) Trends is generally favorable and comparable to the peer average, outperforming the peer average in the cost per passenger measure and outperforming or very close to the peer average in per capita measures.

While RIPTA ranked above its peers for more than half (15) of the 27 combination performance indicators, casualty and liability insurance, vehicle maintenance and general and administrative costs as well as the vehicle hours/operations employees ratio are categories that would benefit from improvements.

Audit Process

The audit process began with a submittal of a data request list to RIPTA that involved each review area. Then, interviews were conducted with senior managers at each unit of RIPTA. These interviews provided our team with an understanding of the organization structure of each RIPTA functional unit and its key managerial and operational staff.

After these initial interviews are completed, detailed audits were conducted of all functional areas of RIPTA. The audit procedure for each operational area typically followed four key steps:

1. Conducted interviews and discussions with management assigned responsibility for each unit. During these interviews, detailed information was obtained on the functional activities within each unit.

2. Assembled data from each audit area in order to evaluate performance. For example, data was obtained to determine a variety of performance measures such as the road call performance, pay to platform ratio, accident rate, route performance, overtime pay, etc.

3. Observed a number of work functions as they are performed. This included areas such as vehicle dispatching, vehicle servicing, vehicle maintenance, parts distribution, information operators, etc.

4. Prepared description of current functions, detailed analysis and audit findings from each review area. This draft material was submitted to and reviewed by each appropriate unit at RIPTA. Once the review was completed and comments obtained, we prepared audit recommendations. It should be noted that, where appropriate, audit reports also highlight those aspects of each unit that merit special attention for outstanding performance.

Audit of Functional Areas

The Management Performance Audit of RIPTA addressed the 13 functional areas that are listed below:

1. Human Resources
2. Finance
3. Fixed Route Transportation
4. RIde Paratransit Service
5. Maintenance
6. Procurement
7. Transit System Development/Grants & Planning
8. Risk Management and Insurance
9. Safety and Security
10. Marketing and Communications
11. Customer Services (Department of Specialized Transportation)
12. Information Technology
13. Litigation Management

Management Performance Audit Recommendations

Detailed information and justification for each recommendation is contained in the appropriate section for each functional area. While the reviews and findings in some functional areas were favorable, some areas were identified as a focus for further improvements. Examples of the key recommendations made for each of the functional areas are as follows:

Human Resources

- Address turnover among RIde Division operators and enhance the application process to effectively communicate the nature of the work to applicants.

- Centralize the task of determining accurate headcounts for employee categories needs, taking into account employee availability and calculations for the optimal balance between additional staff persons and the use of overtime.

- Pursue various changes to the health care plans in subsequent negotiations, including: contributions to premiums from early retirees; increased service and prescription copays to be more consistent with national trends; and the introduction of third and fourth tiers within the plan. Since RIPTA follows the State program, this may not be possible unless the State were to change.

- Continuously review operator training program, including an analysis of the safety and customer service performance of new drivers throughout the first year and continue to make use of outside experts in the training field to evaluate and modify training curriculum and techniques.

Finance

There were no recommendations made in this functional area.

Fixed Route Transportation

- Compare the total number of missed trips to scheduled trips overall on a monthly basis to ensure that RIPTA continues to exceed the guideline of missing only 0.50 percent of scheduled trips.

- Revisit the policy of hiring vehicle operators as Flex Division operators first and moving them to fixed route after a particular period.

- Expand the fixed route operator extra board to a ratio of 10 to 1 rather than the current 13 to 1.

- Track use of long term and short term sick leave separately, monitoring them to identify problems and trends and develop remedial programs to address any identified problems.

- Equip at least 10 percent of its fleet with APC equipment. This would represent approximately 22 vehicles, an increase of 12 over the current level.

- Establish a specific training curriculum for new Street Supervisor/Dispatchers as well as retraining for existing employees that includes training on line management techniques and develop a line management handbook for Street Supervisor/Dispatchers.

RIde Paratransit Service

- Track RIde trip cancellations in two ways – early cancellations that have no impact on service and therefore costs and late cancellations that do impact service.

- Work with the funding agencies to tighten their policies with regard to passenger cancellations and no-shows, to stem significantly worsening trends in these areas.

- Review progress made by improved driver training program to ensure familiarity with service and appropriate customer service.

- The State of Rhode Island should consider changing the hourly billing rate schedule on the next round of operator contract bidding to take advantage of probable cost savings from a graduated system whereby lower rates in the earlier years could be used to offset the higher costs in the later years.

- Pro-rate administration costs to various funding agencies for the RIde program.

- Revise the categories of complaints for the RIde Program so that complaints currently received under the "Other" category can be compiled in a more meaningful way.

- Improve communications with user groups, funding agencies and stakeholders to ensure that input is received and timely responses are made to their concerns.

Maintenance

- Address a facility expansion program since the Melrose building is already inadequately sized for its existing use. Should RIPTA increase service levels in the future, this facility would need to be expanded or an entirely new facility would need to be constructed.

- Add another farebox/probe currency vault station, one to two more bus washers, and upgrade the fueling system at the Elmwood Depot.

- Develop a bus replacement plan that results in a 20 percent spare ratio, in line with the FTA guideline.

- Consider assigning, until the CNG fleet is completely phased-out, the five CNG powered buses based at the Elmwood Depot to the Newport Depot and moving five of the diesel powered buses based at the Newport Depot back to the Elmwood Depot.

- Carefully monitor the PM inspection program so that inspections are completed within the 500-mile "window" of the 3,000-mile inspection interval. In this regard, consider using actual miles based on odometer or hubodometer readings instead of using scheduled miles to identify when a PM inspection for each bus is due.

Procurement

- Update its Procurement Standards Manual to address any changes to federal requirements.

- Reexamine minimum and maximum order levels and rebalance the consumption rates to be consistent with current practice. In doing so, RIPTA also may be able to reduce the current investment level of $2.25 million and increase the rate of annual inventory turnover.

Transit System Development/Grants & Planning

- Develop a more comprehensive data collection program based on quantitative information to support planning and scheduling activities. This could be achieved by greater reliance on APC's (plans should be made to expand the number of vehicles equipped with Automatic Passenger Counters) and introduction of an AVL system.

- Prepare a 3 to 5 year transit development program that describes options that range from continuation of current service levels through various increments of system expansion. Explore impact of shifting from primarily radial to multi-nucleated configuration and contrast the impacts of each of these scenarios in terms of their costs and benefits.

- Examine what must be done to increase the capacity of downtown transit facilities. This could include modifications to existing as well as new facilities.

- Use pay/platform ratio (PPR) to monitor scheduling efficiency. The PPR value should include all pay components and be determined for each service day and

garage. While the values are acceptable, they are at the higher end of the range.

- Make greater use of HASTUS to evaluate options such as changes to contract terms, layover reductions, and modifications to downtown transit arrangements.

- Reduce layover times on an incremental basis.

Risk Management and Insurance

- Obtain a new computer system to better manage the claim handling process. There are numerous claims management systems on the market that can probably be procured for less than $10,000.

- The RIPTA Board of Directors made a decision not to renew the vehicle excess liability coverage in June 2005. Consideration should be given to pursuing this issue with the Board again for purchasing a reasonable level of excess coverage. Minimum recommended limits should be $10 million per occurrence above a self-insured retention.

- Investigate obtaining excess coverages, (when they were purchased) from major reinsurers that have underwriting arms that specialize in providing high levels of coverage to individual self-insured's such as RIPTA.

- Consider increasing the Accident and Casualty Reserve Fund to better represent outstanding claims.

- Update value of RIPTA buildings to reflect current replacement costs.

- Identify specific positions for light duty within RIPTA's Light Duty/Return to Work Program as part of Workers' Compensation cost saving measures.

- It is unclear as to the exposure that RIPTA may have due to a ferry problem. Therefore, RIPTA should have its attorney contact a maritime attorney to determine if any risk exists and if so what steps should be taken to protect RIPTA from such risks.

- Verify that any outside parties involved in the management and investment of pension funds have adequate honesty bonds and professional Errors and Omissions coverage. This includes investment advisors and money managers.

Safety and Security

- Participate in the Surface Transportation Intelligence Sharing and Analysis Center (ST-ISAC) in order to obtain security threat information on a continuing basis so that it can respond to any threats identified in its service area.

- Develop protocols to respond to the daily security threat advisory levels issued by the Department of Homeland Security and procedures that address control of security sensitive documents and security critical systems and facilities.

Marketing and Communications

- Evaluate the current division of activities in marketing between the Marketing/Communications and Government Affairs and the Transit System Development/Grants & Planning Departments to assess if combining these units under one department may improve coordination of activities. In lieu of this, develop a formal process for maximizing information sharing for those occasions when Marketing and the Planning Department's Express Travel team participate jointly on a marketing project

Customer Services (Department of Specialized Transportation)

- Streamline complaint reporting in order to automate the compiling of summary statistics.

Information Technology

- Develop a plan to replace the AS400 System that would enable RIPTA to migrate towards a system over the next five to 10 years that will be able to accommodate its future needs, particularly as these relate to RIPTA's implementation of ITS technologies.

- Develop a systems engineering analysis process in order to evaluate all USDOT-funded ITS projects that includes identifying the following: portions of statewide ITS architecture being implemented; participating agencies' roles and responsibilities; requirements; applicable ITS standards and testing procedures; procedures and resources necessary for operations and system management; and analysis of financing and procurement options.

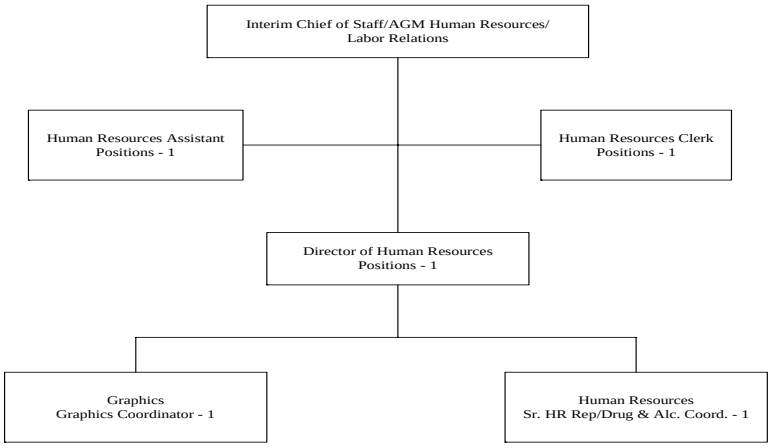
Litigation Management

- There are no recommendations made in this functional area.

HUMAN RESOURCES

The Human Resources Department administers all functions dealing with employment at RIPTA for all employee categories with the exception of employee training. The Human Resources Department is headed by the Assistant General Manager for Human Resources and Labor Relations. Within the Human Resources Department, the AGM for Human Resources and Labor Relations has five direct reports. This includes the Director of Human Resources, one Senior Human Resources Representative, one Human Resources Clerk, one Human Resources Assistant and the Graphics Coordinator. The organization of the Human Resources Department is shown in Figure 1.

Figure 1
Department of Human Resources



The various functions performed by the Human Resources Department fall into the following categories:

- Position Management - policies related to job descriptions, organizational structure, compensation, monitoring vacancies as well as administering the hiring process.

- Labor Relations - practices and policies related to labor contract negotiations, interpretation of labor contracts and administration of the grievance process.

- Employee Benefits - administration of all benefits programs including employee health and welfare benefits, as well as interpretation of benefits mandated by labor agreements.

- Employee Relations and Staff Development - development and implementation of policies related to performance evaluations, compensation, discipline and availability.

- Governmental Mandates - policies related to state and federal laws and regulations (e.g., Drug and Alcohol Screening, Equal Employment Opportunity, Drug-Free Workplace, and Family and Medical Leave Act).

The procedures followed by RIPTA to address the human resources function are discussed below and are organized into the five categories listed above. Conclusions and recommendations reached as part of this analysis are listed at the end of this section.

Position Management

The primary function of the Human Resources Department is to establish and manage the actual staff positions that are used to address the various functions performed by RIPTA on an organization-wide basis. This position management function involves defining positions, maintaining organization structure, monitoring position vacancies and hiring personnel

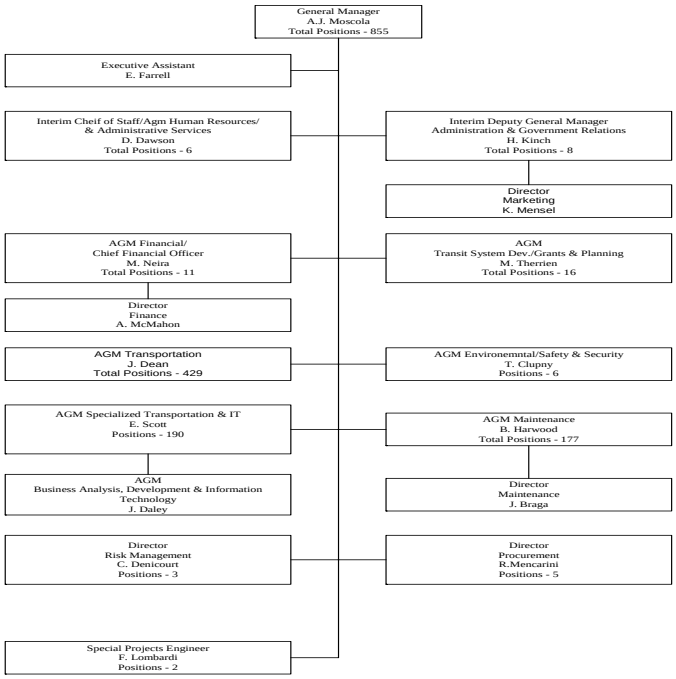
Position Definition - This process begins with the creation of job descriptions and establishing the parameters of each position (i.e., pay scale and applicable union representation). The AGM for Human Resources creates and maintains all job descriptions. New job descriptions or job description updates are done with the input of the applicable department head. The union representation of any new or existing position is established through contracts between RIPTA and the two unions representing RIPTA employees. Pay scales for operations positions are determined by the wages rates established for the position in current labor contracts. Pay scales for non-operations personnel are determined based on comparable internal positions as well as comparable positions with the state. In some instances, outside contractors will be procured to conduct compensation studies to determine the appropriate pay scale for certain positions.

Organizational Structure - The Human Resources Department is responsible for finalizing the organization structure that is designed to use the various positions described above to address the various functions that RIPTA must perform. Along with direction from the General Manager and input from the department heads, the Assistant General Manager for Human Resources maintains the organizational chart for the agency. Any efforts of re-organization are handled by Human Resources Department.

As shown in Figure 2, RIPTA's current organization chart includes 11 direct reports to the General Manager (not including the General Manager's Executive Assistant). Of these 11 direct reports, eight are Assistant General Managers whose departments range in size from 6 positions to 429 positions. Two direct reports are Department Directors and one is a Special Projects Engineer. Each of these direct reports is responsible for a particular function. This organization is similar to organization structures found at other transit systems. However, there is one peculiar aspect to the current organization chart -- the Assistant General Manager for the Specialized Transportation function is also responsible for the Information Technology (IT) function. These are two functions that would not be naturally placed together in any other transit organization. The IT function would either be a separate unit or placed under a different department such as Administration.

Further, the coupling of these two functions does lead to another peculiar aspect of the current organizational structure in that the Assistant General Manager for Business Development (Information Technology) now reports to the Assistant General Manager for Specialized Transportation and Information Technology. This is inconsistent with the structure of the remainder of the organization.

Figure 2
Organization of the Rhode Island Public Transit Authority
(February 2006)



Staffing Levels - For each of the staff positions within the organization, a staffing level is determined. This is a budget driven number and is determined by the Finance Department. The Finance Department identifies positions within RIPTA that are budgeted and determines a budgeted "headcount" for certain staff positions such as operators and mechanics. The most important of these headcount figures is the number of Flex Division and fixed route operators. The Finance Department currently determines the budgeted headcount for fixed route and Flex Division operators by taking the transportation function budget for each division and dividing that number by the highest operator wage rate and again by 2,080 (the number of work hours per year). The resulting figure is the budgeted headcount for the respective divisions. From this number, the number of full-time and part-time operators is determined. Currently, 15 percent of the total pool of fixed route and Flex Division operators can be part-time employees. For the past several years, the budgeted headcount has remained at a "steady state" level.

In addition to the budgeted headcount number developed by the Finance Department, the Scheduling Department uses the Hastus scheduling software to prepare a separate manpower requirement report. This number is based on the number of operator runs needed to provide all scheduled service. These numbers are generated independently of one another and are not compared and discrepancies are not pursued. As will be discussed below, the Human Resources Department uses the number generated by the Finance Department.

Monitoring Vacancies - Using the budgeted headcounts prepared by the Finance Department for each position within each department, the Human Resources Department monitors whether or not all budgeted positions within the RIPTA organization are filled with current employees. To monitor the level of operations employees, the Department runs a report using the HTE system that lists the number of current employees by category on a monthly basis. This is then compared to the budgeted number. If the number of current employees is fewer than the budgeted number, the Department will initiate the hiring process for the appropriate position. The process for non-operations employees begins when a RIPTA department head notifies the Human Resources Department of an upcoming vacancy. If the position to be vacated is budgeted, the hiring process will be initiated.

Hiring Operations Personnel - Almost an ongoing function of the Human Resources Department is the hiring of operations personnel, which includes primarily fixed route and Flex Division operators. As mentioned above, this process is initiated through the monthly monitoring of vacant positions. If the current number of actual operators is below the budgeted headcount, operator positions will be posted.

Part-time fixed route operator positions must first be posted internally. According to RIPTA's contract with ATU Chapter 618, 100% of the vacant fixed route operator positions must be filled with current Flex Division operators who have been employed by RIPTA for two years or more and possess the proper Commercial Drivers License (CDL). Also, 50% of the vacancies must be filled with Flex Division operators employed by RIPTA for one year or more. If any remaining vacancies exist, according to the contract, the positions are posted externally. In practice, however, RIPTA has attempted to fill 100% of vacant fixed route operator positions with Flex Division operators with one or more years with RIPTA.

According to internal RIPTA analyses, new fixed route operators who started as Flex Division operators have demonstrated better records in terms of customer service complaints, discipline and safety performance. For this reason, RIPTA has favored an employment progression of full-time Flex operator, part-time fixed route operator then full-time fixed route operator. It should be noted that there are currently only three part-time Flex operators. To encourage this, RIPTA's labor agreements with ATU provided the same benefits package to part-time fixed route operators as well as full-time and part-time Flex operators. Therefore, there was no disincentive for a full-time Flex operator to move into a part-time fixed route operator position. However, based on a recent labor arbitration ruling, full-time Flex operators were awarded the same benefits package as full-time fixed route operators. This created the situation in which a full-time Flex operator would be losing benefits by moving to a part-time fixed route position. Recent experience has shown that full-time Flex Division operators are still interested in part-time fixed route positions due to the pay differential and the prospect of an eventual full-time fixed route position.

When vacancies exist, positions are posted internally and, if necessary, externally. Before positions are posted externally, the Human Resources Department will also refer to their file of active applications. The active applications may provide a sufficient applicant pool and make it unnecessary to post the position externally. Applications are then received in the Human Resources Department. External applicants are required to provide RIPTA with permission to obtain a copy of the applicant's driving record and conduct a Background Criminal Investigation (BCI). Applicants for operator positions should already posses a sufficient level of CDL. In certain situations, RIPTA may provide some level of CDL training.

Human Resources staff will then screen applications for qualifications and select candidates for further consideration. The driving records for these applicants are then obtained and the State Attorney General's office is contacted for in-state BCI information. The screened applications are scored according to established criteria regarding driving record and BCI.

Along with a selected panel, the Senior Human Resources Representative will then conduct interviews of the identified candidates. The panel scores each application according to the established criteria and selects finalists. The Human Resources Department then obtains a nationwide BCI and driving record for finalist external candidates. Based on the results of the nationwide BCI and driving record review, the Senior Human Resources Representative then makes an employment offer to the selected applicants. The offer is contingent upon the successful completion of a drug and alcohol screening and a pre-employment physical.

Applicants who pass the screening and physical may accept the offer of employment and report to work on a given date. Operators begin their employment with training that is discussed below.

Over the past two fiscal years, RIPTA's fixed route Transportation function has been short of its budgeted headcount. For the fiscal years ending June 30, 2005 and the current fiscal year ending June 30, 2006, the budgeted headcount for fixed route bus operators has remained at 388. RIPTA ended the fiscal year ending June 30, 2005 with 369 fixed route bus operators and as of June 2, 2006, RIPTA employed 378 fixed route bus operators. Therefore, for the past two years, RIPTA has been consistently 10 to 19 operators short of the budgeted headcount. This can have a significant cost implication to a transit agency if the cost needed to cover work with operators at overtime wages exceeds the cost of the fringe benefits for the additional employees. This situation has been exacerbated by the fact that over the past two years, the Flex Division has experienced vehicle operator turnover rates of 24 percent in 2004 and 21 percent in 2005. This affects headcount in the fixed route Transportation since RIPTA has followed a policy of "as close to full staff as possible" staffing the Flex Division before operators are transferred to fixed route operations. Another contributing factor is the fact that RIPTA instituted a self-imposed hiring freeze in mid-2005 due to the uncertainty of its funding situation.

The hiring process for mechanics, utility persons and supervisors is similar. One difference is the fact that applicants to mechanic positions must also pass an aptitude test. Applications for Supervisor positions may be screened for additional criteria such as customer service, attendance record, discipline and safety records as an operator.

Hiring Non-Operations Personnel - The hiring of non-operations personnel, also the responsibility of the Human Resources Department, is similar to the process for hiring operations personnel in many regards. Typically, vacancies in non-operations positions are identified when a department head notifies the Human Resources Department of an impending departure of an employee. This initiates the hiring process for the position. The primary step in the process is to determine if the position is still budgeted. If so, the AGM for Human Resources will review the current job description for the open position. If the job description is out of date or does not exist, the AGM for Human Resources will create or update the description.

The Human Resources Department then posts the positions internally. Interested internal candidates with the proper qualifications may apply. In many instances, non-operations positions will be filled internally after receiving applications from qualified internal candidates and the conduct of interviews of internal candidates exclusively. If an internal candidate is not selected, the position is posted externally. In many instances, internal and external posting may occur simultaneously depending on the situation. As with applicants to operations positions, external applicants to non-operations positions must provide RIPTA with permission to conduct a BCI and obtain a copy of the applicant's driving record. In-state BCI information as well as driving record information is obtained for each applicant. For non-operations positions, this information may not be critical to a job offer. The information is often not obtained in the pre-interview stage, but is always obtained before any job offer is extended. Applications are then screened and qualified candidates are contacted for interviews.

Similar to operations personnel, candidates are interviewed by panels. Again, each applicant is scored based on certain pre-established criteria and the panel selects finalists. Before an offer for employment is extended, a nationwide BCI is obtained for all finalists. The AGM for Human Resources then makes an employment offer to the selected applicant or applicants. The offer is contingent upon the successful completion of a drug and alcohol screening and a pre-employment physical. If the applicant passes the screening and physical, they may accept the position and reports to work on an agreed upon date.

Labor Relations

A significant amount of effort by the Human Resources Department is dedicated to the labor relations function. This includes preparing for and conducting labor contract negotiations, interpreting labor contracts and administering the grievance process. According to staff, this function requires a significant portion, and at times all, of the time of the AGM for Human Resources. This section describes the processes followed to address this function.

Labor Contract Negotiations - RIPTA enters into multi-year labor contracts with the three unions representing RIPTA employees, the Amalgamated Transit Union (ATU) Division 618 and 618A as well as the Laborers International Union (LIU) Local 808. ATU Division 618 represents operations employees, ATU Division 618A represents operation's Supervisors while the LIU Local 808 represents administrative employees. The employees represented by the ATU Division 618 is a much larger group of employees and the contracts with this group have much larger cost implications for RIPTA.

Contract negotiations are ultimately the responsibility of the General Manager with much of the preparation and administrative work being completed by the AGM for Human Resources. To prepare for these negotiations, the AGM for Human Resources continuously monitors the current contract for flaws and keeps a running list of issues that will need to be addressed in the next negotiation. The AGM for Human Resources also meets regularly with state negotiators to determine the policy direction of the State of Rhode Island. The AGM will also research the labor contracts of other public employees and transit agencies. A comprehensive grievance analysis will also be performed to determine the clauses in the current contract which have resulted in grievances. Proposals will be developed to change the language in those clauses to provide clearer language and less debatable interpretation.

The AGM for Human Resources will also meet with department heads to develop policy proposals for upcoming negotiations. Staff persons such as Finance or Scheduling will be called upon as needed to assist in the preparation of these proposals.

As negotiations actually take place, the AGM for Human Resources will always be present as a representative of RIPTA. Throughout the negotiations, various staff members such as Finance and Scheduling will be called upon to determine cost implications of proposals forwarded by the union. Counter proposals will also be developed with input from applicable staff.

After a tentative agreement is reached, the AGM for Human Resources prepares the necessary documentation for review by the RIPTA Board of Directors. Upon approval by the Board of Directors and the union membership, the language in the document is finalized. The AGM for Human Resources then discusses the implications of the contract with affected department heads.

RIPTA and the ATU Division 618 have been in continuous negotiations for over three years for a new contract.

Labor Contract Interpretation - After negotiated contracts are in place, there are often questions of the interpretation of clauses within that contract. In many instances, department heads will ask the AGM for Human Resources to provide RIPTA's interpretation of how a particular clause applies to given situations. The applicable union may disagree with this interpretation and a grievance may result.

Grievance Process - The contracts between RIPTA and the two unions specify a three-stage grievance process. The first two stages are internal within the department of the employee. The third stage involves the RIPTA General Manager. The AGM for Human Resources will prepare all of the necessary documentation for any third stage grievances. Currently, RIPTA has an average of six to eight stage three grievances per month.

After the third stage, the union has the right to take the issue to arbitration if it does not agree with the decision of the General Manager. The union must vote at a union meeting on whether or not to take the grievance to arbitration. If the grievance proceeds to arbitration, the AGM for Human Resources manages the arbitration process. This includes coordinating dates, scheduling witnesses, collecting any necessary data, preparing exhibits and working with the attorney on briefs.

In the past five years, 255 grievances were filed by RIPTA employees. Of these, only 15 advanced to arbitration.

The level of grievances filed and the number that progress to arbitration is somewhat out of the control of RIPTA. In fact, grievances and arbitrations tend to increase as management attempts to enforce rules in the most advantageous manner. One method that management can use to control the level of grievances is to remove ambiguity in contract language that RIPTA is currently attempting to accomplish. As mentioned above, the grievance process feeds back into labor negotiation process through the monitoring of disposition of grievances filed under current contracts.

Employee Benefits

Another major task within the Human Resources function is establishing and administering employee benefits programs. The paragraphs below provide a description of the current employee benefits programs and the procedures followed in administering those programs.

Description of Benefits Programs - RIPTA offers five major benefit programs to its employees including health, dental, vision, life insurance and pension. This section provides a description of the health and welfare benefits (i.e., health, dental, vision and life insurance). A more detailed description and analysis of the pension program is provided in another section of this report. RIPTA employees also have access to an Employee Assistance Program (EAP). In addition, employees are eligible for workers compensation and temporary disability insurance. These two programs, however, are government mandated and are not discussed in this section as there is no latitude in the benefits or costs.

The most significant of these benefits programs is health care insurance. All RIPTA employees are provided with health care insurance with varying levels of contribution depending on employment status. On May 1, 2005 RIPTA changed its carrier to United Healthcare Insurance Company after obtaining this benefit through Blue Cross/Blue Shield of Rhode Island for several years. As part of this change, RIPTA continued the program of purchasing health insurance jointly with the State of Rhode Island. The program is a Preferred Provider Organization (PPO) arrangement. Claims are self funded which means that actual claims and a service fee are paid to United. The risk remains with the employer rather than being transferred to an insurer. This is an acceptable arrangement for a large employer. However, under this arrangement, the employer must recognize that monthly costs are actually higher than what is being paid. This is due to the fact that there is elapsed time between when a medical service is provided and when payment is made. This is referred to as “run out”. An industry rule of thumb is that run out is as much as 3 months of paid claims for a policy period. This could be a high as $2 million for RIPTA’s plan. RIPTA needs to recognize “run out” as a liability.

RIPTA's cost of providing health insurance coverage is higher than would be expected. Overall health insurance cost from FY 2001 to FY 2005 has increased from $3,451,011 to $7,817,760. This is a doubling of costs (126 percent) in five years. A major reason for these cost increases is an increase in staffing for increased RIde services as well as new programs such as centralized maintenance for the RIde vehicles and bringing in the administration of the RIde program in-house. Other reasons for some of the increase are planned to be addressed in the ongoing labor negotiations.

- Non-represented and Local 808 employees currently contribute to the cost of their health insurance. RIPTA and ATU have reached a tentative agreement that also includes contributions by represented employees toward health insurance.

- Early retiree costs are very high and retirees make no contribution to the plan. Included in the tentative agreement with ATU referenced above are contributions from retirees' spouses.

- The plan is a PPO rather than a less costly HMO. However, the design of the plan itself is good in that, while more costly than an HMO, it does contain various cost management attributes.

- The plan benefit structure that is tied to the State program has relatively low copays for services and prescriptions. For example, physician copays are $10 per visit while $15 and $20 copays are becoming more common in even the largest corporations.

- The current plan that is tied to the State program only has two tiers; single and family. It would be advantageous to RIPTA if the State expanded their coverage options to include a three or four tier plan.

Dental insurance for RIPTA employees is currently purchased from Delta Dental of Rhode Island in a quasi-insured mode. Plan design is typical of that offered by employers and the rates are in the range that would be expected given the size of RIPTA. Cost increases over the past five years have been modest and in line with industry trends. The plan is structured to encourage prevention with very generous benefits in that regard. RIPTA employees contribute to coverage at the rate of 25 percent.

Costs could be decreased slightly by instituting a deductible or member copays. However, given the emphasis on prevention, the savings created by introducing these copays could be outweighed by employees and their families not seeking preventative treatment.

The vision care benefit is a self-funded plan, similar to the health insurance plan described above. The program is rather limited in scope. Payments over the past five years have doubled from $39,000 to $82,000. If this program, that is also tied to the State program, is to be expanded to benefit more employees, it may be advisable to solicit other proposals to see if a more cost effective product can be obtained to minimize the cost impact.

Finally, RIPTA provides a modest Life and Accidental Death and Dismemberment policy through Aetna Life Insurance Company. It is fully insured meaning that all risk is transferred to the insurer. This is a prudent decision as life coverage can be very volatile over the short term. While overall costs have increased approximately 15 percent over the past five years, this appears to be more of a function of increasing payrolls rather than rates. The current rates are within the ranges expected for the transit industry. Employees contribute 100 percent of the cost of the Life Insurance Plan.

In addition, there is an elective Union-sponsored Long Term Disability (LTD) program available to unionized 618 and 618A employees. This program is payroll deducted and managed exclusively by the Union. RIPTA management does not participate or have any input into the program.

Administer Employee Benefits Program - The Human Resources Department is also responsible for administering the programs described above. To maintain accurate records regarding the health care insurance program, the Human Resources Department enters data directly into the United Healthcare Insurance system regarding new employees. Changes are also made by Human Resources staff directly into the system regarding employee benefits changes, terminations, resignations and retirees. The Finance Department monitors the chosen options and payments from resigned or terminated employees who have chosen to continue their insurance coverage under the COBRA program. Similar processes are followed for the dental, vision and life insurance benefits. Dental and vision programs are administered electronically directly with the vendors, but manual forms, rather than direct system entry, are used for the administration of the life insurance program.

The conversion from Blue Cross/Blue Shield of Rhode Island to United Healthcare Insurance was a major undertaking for the Human Resources Department. This was especially true in terms of data regarding employees and their dependents. Data provided from Blue Cross/Blue Shield regarding the current enrollees did not include family links. That is, there was nothing to note with which employee each dependent was associated. The Human Resources Department conducted a survey of all employees to determine which dependents were associated with their account. The Human Resources Department then linked each dependent enrollee to the appropriate employee account in the United Healthcare Insurance system.

It is also the responsibility of the Human Resources Department to provide the RIPTA's pension program administrator, Met Life and Prudential, with necessary information regarding retirees. First, all RIPTA employees contemplating retirement meets with the AGM for Human Resources. The AGM for Human Resources or Senior HR Representative manually calculates the expected monthly pension amount and presents it to the employee. Various records must be consulted for the AGM or Senior HR Representative to make this calculation. Employees who decide to continue with the retirement process complete necessary paperwork. The Human Resources Department administers this process and presents the pension information to the Joint Pension Board.

Lastly, the Human Resources Department acts as the resource center and liaison between RIPTA employees and the Employee Assistant Program (EAP). Human Resources staff is knowledgeable of the various services available through the EAP and can direct employees to the appropriate resources.

Employee Relations and Staff Development

The next group of tasks within the Human Resources function concern RIPTA's relations with its employees and practices designed to maintain and develop the skills of its employees. This includes policies and procedures related to performance evaluations, salary progression, discipline and employee availability.

Training and Skills Development - Most training at RIPTA consists of the initial training provided to new operations employees. As new RIde and fixed route operators are hired, the Human Resources Department arranges for new operator training classes. Conducting the training classes is a function of the Safety Department and is staffed by a Lead Trainer, one full-time Trainer and, when necessary, a Street Supervisor or bus operator on temporary assignment to provide training.

The training for new fixed route operators consists of twenty days of classroom and on-road instruction. The training for RIde operators now consists of two weeks of classroom training and three weeks of on-road instruction with RIde Division staff. There is also currently a retraining of all RIde Division operators being conducted to teach defensive driving skills. An outside consultant was hired by RIPTA to design and conduct the training course. This program was paid for through an FTA grant designated for training purposes. Other retraining for RIde Division operators and all retraining of fixed route operators is done on an as needed basis for individual operators based on safety performance. Certain retraining is mandated before an operator can return to work after a specified number of chargeable accidents. There is no set curriculum or timetable for these retraining sessions. While this is the only retraining currently mandated for fixed route operators, the entire fixed route training program is currently under revision and include plans to expand the current defensive driving course being provided to RIde Division drivers to fixed route drivers.

Administer Employee Salary Progression - Based on various policies or contracts, RIPTA employees are due salary increases at certain intervals. Since many of these salary increases are given upon the completion of certain milestones (i.e., years of employment), different employees are due for increases in different months. To ensure that these salary increases are processed in a timely manner, the Human Resources Department identifies the applicable employees on a monthly basis. The process currently followed makes use of a Salary Progression Log into which a Human Resources clerk manually enters data regarding the months in which each employee is scheduled for a salary increase. On a monthly basis, the Human Resources clerk consults the log, identifies the applicable employees and the applicable increase and updates the log entry for the applicable employees to reflect the next scheduled increase. The AGM for Human Resources reviews the information and forwards the payroll authorization forms to the AGM for Finance and the General Manager for approval and then to the HTE Payroll system for processing.

Administer Employee Discipline Process - RIPTA's policies and labor contracts all specify certain actions or milestones that warrant disciplinary action. An example of a milestone is when an operator has a certain number of chargeable accidents, certain disciplinary actions are taken. The process includes a progression of verbal and written warnings through suspension and ultimately termination. Individual department heads track the performance of their employees in terms of actions or milestones. This is typically addressed with manual processes in an ad-hoc manner. Computerization is generally not used to track such information and automatically alert applicable staff persons when an issue needs to be addressed.

One exception to department heads being responsible for tracking the performance of their own employees in terms of disciplinary measures is the Safety Department's tracking of issues such as the number of chargeable accidents for operators and other safety related issues. The Safety Department has the authority to initiate the discipline process in response to these issues. Another exception is that the Human Resources Department is always responsible for discipline resulting from positive Drug testing or Alcohol screenings.

Individual department heads are responsible for administering the discipline process through the warning phases. Records of these warnings are maintained by the individual departments. Throughout the warnings phases, the Human Resources Department acts in a consultative manner as a resource for department heads. Letters of suspension are also the responsibility of department heads, however, depending on the circumstances of the situation, the department head may request that the AGM for Human Resources draft and issue the letter. If the department head issues the letter of suspension, this action is communicated to the Human Resources Department for the purposes of maintaining employee personnel files.

The AGM for Human Resources is always responsible for preparing and issuing letters of termination. In many instances, the AGM for Human Resources will meet with the employee and, if necessary, union representation to present them with the letter of termination. If the termination goes through the grievance process to arbitration, the Human Resources Department is then responsible for preparing materials for the arbitration.

Monitor Employee Availability - The overall availability of certain operations employees has significant cost ramifications for a transit agency. This is due to the fact that much of the operations work must be covered whether or not a regularly scheduled employee is present. If they are not, in many instances the work must be covered with additional employees or existing employees working overtime. In the past, the Human Resources Department was responsible for tracking the overall availability of RIPTA employees within certain operations categories. That function was transferred to Transportation Operations. The process includes manual reviews of various documents including Daily Attendance Report, Employee Returned to Work Report, Paid Sick Log, headway sheets and Weekly Attendance Logs to determine the number of days missed by all Operations' employees.

Using this data, a Clerk calculates employee availability for each of these categories of employees on a monthly basis. This calculation is made by entering the total number of workdays missed for all of the employees in each category into an Excel spreadsheet specifically designed to provide certain statistics. The spreadsheet calculates the average number of employees in each category for the month and also provides an annualized projection for availability by category.

This is an issue of concern especially given RIPTA's performance in terms of vehicle hours per employee involved in vehicle operations for the bus mode. According to the National Transit Database definitions, this includes all employees involved in transportation administration and support, dispatch, scheduling of transportation operations, revenue vehicle operation, ticketing and fare collections as well as system security. The Peer Group Review noted that RIPTA operated 1,434 fixed route vehicle hours per fixed route employee involved in vehicle operations in 2005 that was approximately 8 percent below the peer group average of 1,508. The Peer Group Review also showed that RIPTA's performance in this measure, while remaining relatively stable, did worsen slightly between 2000 and 2005. This has significant has cost implications for RIPTA.

Tracking employee availability allows for the formulation of more effective policies to address the issue. A worsening situation in employee availability among operators results in fewer revenue hours per operations employee and increases the number of operators needed. This increases RIPTA's costs on a per revenue hour basis and restricts the agency's ability to maintain or increase service levels.

Governmental Mandates

As a publicly funded agency, RIPTA must comply with various employee related programs mandated by the federal or state government. This section describes the policies and procedures followed by RIPTA to comply with the employee drug and alcohol screening program mandated by the U.S. Department of Transportation.

As a requirement of this program, RIPTA and its contractors must have adopted and implemented a drug and alcohol testing program that meets the regulations promulgated in Title 49, Part 655 of the Code of Federal Regulations (49 CFR Part 655). Furthermore, the testing procedures that are used by RIPTA and its contractors must meet the requirements of Title 49, Part 40 of the Code of Federal Regulations (49 CFR Part 40). The substances for which RIPTA and its contractors must test include: marijuana, cocaine, opiates, phencyclidine, amphetamines and alcohol. These drug and alcohol testing regulations apply to all safety sensitive employees of RIPTA and its contractors. Employees who meet the following criteria are considered to be safety sensitive:

- operating a revenue vehicle including when not in revenue service;
- operating a non-revenue vehicle when required to be operated by a holder of a Commercial Driver's License (CDL);
- controlling dispatch or movement of a revenue service vehicle;
- maintaining, repairing, overhauling, and rebuilding a revenue service vehicle or equipment used in revenue service; and
- carrying a firearm for security purposes.

RIPTA and its contractors are required to ensure that, at a minimum, their programs include provisions for conducting drug tests for the following circumstances: pre-employment, random, reasonable suspicion, post-accident, return-to-duty, and follow-up. In addition alcohol testing also must be conducted for the aforementioned circumstances, with the exception of pre-employment. For random drug tests, RIPTA must ensure that it conducts a number of tests

throughout the calendar year that is equal to or greater than 50 percent of the safety sensitive workforce. Similarly, the number of random alcohol tests must be equal to or greater than 10 percent of the safety sensitive workforce. Although RIPTA and its contractors can exceed FTA's requirements and test other than safety sensitive employees and tests for substances other than the five drugs and alcohol, these additional tests must be done under RIPTA's or its contractors' authority and can not be performed as if these are required by FTA. Federal forms cannot be used to record these tests. Any elements that exceed FTA's requirements must be clearly identified in the drug and alcohol policy as being performed under the agencies or company's authority. In addition to testing safety sensitive employees, RIPTA also tests non-safety sensitive employees. However, this discussion focuses only on the FTA-required drug and alcohol testing program.

Organization and Staffing - The Drug and Alcohol Program is administered by the Human Resources Department. There is one staff member, the Senior Human Resources Representative/Drug & Alcohol Coordinator, who is responsible for managing the overall program.

Policy - RIPTA has a drug and alcohol program policy for its safety sensitive employees that was adopted in October 2001. The policy includes all elements required by 49 CFR Part 655. These elements and their location in RIPTA's policy are identified in Table 1.

Table 1
Summary of Drug and Alcohol Policy

Policy Element	Description
a. approval by governing board or other "final authority" for the agency	• Adopted by the Board, October 2001
b. identity of contact person	• Additional Resources (p. 20)
c. employee categories subject to testing	• Safety Sensitive Classifications - Fixed-Route (p. 4) - Flexible Services Division (p. 5)
d. prohibited behavior	• Prohibited Drug Use Rules & Drug Testing Procedures (p. 9) • Alcohol Misuse Rules & Alcohol Testing Procedures (p. 11)
e. testing circumstances	• Categories of Testing for Prohibited Drug Use and Alcohol Misuse (pp.6-8)
f. testing procedures	• Prohibited Drug Use Rules & Drug Testing Procedures (p. 9) • Alcohol Misuse Rules & Alcohol Testing Procedures (p. 11)
g. requirement that covered employees submit to testing	• Policy Statement (p. 2)
h. behavior that constitutes a refusal to submit to a test	• Refusal to Submit to Testing (p. 13)

Table 1 (Continued)
Summary of Drug and Alcohol Policy

Policy Element	Description
i. consequences for an employee who has a verified positive test result	• Consequences of Positive Prohibited Drug Screen or Breath Alcohol Concentration Greater Than 0.040 (pp. 17-18)
j. consequences for an employee found to have an alcohol concentration of 0.02 or greater but less than 0.04	• Violation of Alcohol Misuse Rule (p. 16)

RIPTA's policy includes provisions for conducting all of the FTA required types of testing and requires that tests are performed for the required substances. In addition to FTA's requirements, RIPTA contains policy elements that are included under RIPTA's authority (e.g., pre-employment alcohol testing). These additional elements are clearly identified in italicized type within the policy document.

Safety Sensitive Employees - RIPTA's policy specifically identifies the job classifications that are considered to be safety sensitive. A summary of these classifications is presented in Table 2.

Table 2
Summary of Safety Sensitive Positions

Revenue Vehicle Control/Dispatch	
• General Manager • Deputy General Manager of Operations • Director of Maintenance • Director of Transportation • Director of Specialized Transportation • Superintendent/Maintenance • Assistant Superintendent/Maintenance • Maintenance Foreman • Night Foreman • Body Shop Foreman • Utility Foreman • Relief Superintendent • Director of System Safety	• Safety Officer • Technical Support Officer Research & Development • Technical Support Officer/Training • Superintendent/Transportation • Assistant Superintendent/Transportation • Lead Trainer • Training Instructor • Chief Street Supervisor • Street Supervisor • Flexible Services Manager • Flexible Services Operations Coordinator
Revenue Vehicle Operations	
• Bus Operator • Flexible Services Operator • Transportation Clerk	
Revenue Vehicle Maintenance & Equipment	
• Mechanic, 1st Class • Mechanic, 2nd Class • Utility Worker	• Body Man, 1st Class • Body Man, 2nd Class
CDL Holder/Non-Revenue Vehicles	
• Buildings & Grounds Foreman • Buildings & Grounds Worker	

As shown in this table, RIPTA has classified their employees according to the broad categories identified as safety sensitive in 49 CFR Part 655. Included under the category of Revenue Vehicle Control/Dispatch are a number of executive level positions (e.g., General Manager, Deputy General Manager of Operations, and Director of System Safety). FTA's requirements in this category are specific to those positions in which employees directly control the movement of revenue vehicles and do not necessarily include positions in which a person may incidentally control the movement of a revenue vehicle.

RIPTA has ensured that all safety sensitive employees have received the required one hour training in the drug and alcohol program. Also, supervisors who are responsible to make reasonable suspicion determinations have received the required two-hour training (one-hour each on recognizing the effects of drugs use and alcohol misuse). In addition to these required trainings, RIPTA conducted a follow-up training for supervisors in September 2004.

Random Testing - RIPTA and its contractors are required to conduct a number of random drug tests that is equal to 50 percent of the number of safety sensitive employees in the testing pool. The number of required random alcohol tests is 10 percent. A summary of the random testing rates for RIPTA and its contractors is summarized in Table 3.

Table 3
Summary of Random Testing Rates

	2001	2002	2003	2004	2005
Drug Testing Rates					
RIPTA	50%	49%	50%	53%	55%
RIPTA FLEX	50%	51%	51%	53%	50%
Pawtuxet Valley Bus/Coach U.S.A.	71%	74%	33%	(a)	(a)
Big Apple Tire, Inc.	50%	50%	50%	50%	50%
James L. Maher Center/Newport County Arc	30%	41%	50%	47%	(a)
Cornerstone Adult Services, Inc.	40%	43%	28%	(a)	(a)
City Of Cranston	50%	36%	25%	(a)	(a)
Town Of Coventry DHR	9%	8%	56%	(a)	(a)
Blackstone Health Inc.	57%	43%	13%	(a)	(a)
West Warwick Senior Citizens Center, Inc.	41%	21%	14%	(a)	(a)
Northwest Transportation Service Inc. *(c)*	28%	82%	59%	50%	50%
Goodyear Tire & Rubber Company *(c)*	(a)	(a)	(a)	(a)	0%
Alcohol Testing Rates					
RIPTA	10%	11%	9%	11%	11%
RIPTA FLEX	11%	10%	13%	10%	11%
Pawtuxet Valley Bus/Coach U.S.A.	14%	14%	6%	(a)	(a)
Big Apple Tire, Inc.	50%	(b)	0%	50%	0%
James L. Maher Center/Newport County Arc	7%	9%	13%	13%	(a)
Cornerstone Adult Services, Inc.	7%	0%	6%	(a)	(a)
City Of Cranston	15%	14%	6%	(a)	(a)
Town Of Coventry DHR	0%	8%	22%	(a)	(a)
Blackstone Health Inc.	13%	4%	4%	(a)	(a)
West Warwick Senior Citizens Center, Inc.	6%	7%	0%	(a)	(a)
Northwest Transportation Service Inc. *(c)*	8%	9%	14%	10%	14%
Goodyear Tire & Rubber Company *(c)*	(a)	(a)	(a)	(a)	0%

(a) Contractors' services were discontinued as of May 31, 2003.
(b) Not reported
(c) Part of a larger, common DOT random pool.

Between 2001 and 2004 RIPTA and RIPTA Flexible's random testing rates have been consistent with the required levels. However, the random testing rates for a number of the contractors have been below the required levels. The contracts for a number of these entities were discontinued as of May 31, 2003, which resulted in lower testing rates since only five months of the year were completed. Other entities that appear to be below the required levels are actually part of a larger random pool. In order to determine if these entities are in compliance, RIPTA would need to obtain the data for all of the entities that are part of this pool.

Post Accident Determinations - An important part of the drug and alcohol program involves the decision making process used to make determinations as to whether or not to test following an accident. These decisions at RIPTA rest with supervisors. The supervisors follow a post accident determination checklist and document their decision via this report. The report is filed with the Drug and Alcohol Program Coordinator. RIPTA's post accident testing procedures are consistent with FTA regulations. RIPTA conducts post accident tests in all cases involving a fatality. Unless the employee's actions could not have contributed to the accident, tests also are conducted in cases where individuals involved need medical transport away from the scene and cases where disabling damage to the vehicles is involved.

Contractor and Vendor Monitoring - RIPTA is required to ensure that its contractors with safety sensitive employees have drug and alcohol programs that meet FTA requirements provided such programs are FTA funded. RIPTA has monitoring programs for its contractors, including MIS data collection reports and policies. As shown in the review of random testing rates, a number of contractors appear to be testing below the required rates for the reasons previously stated.

In addition to its contractors, RIPTA also is required to ensure that vendors who provide services as part of the drug and alcohol program (i.e., third-party administrators, collections sites, and testing laboratories) meet FTA requirements. RIPTA's random testing pool is managed by Newport Alliance. Newport Alliance also provides Medical Review Officer (MRO) and collection services. Employee Assistance Program (EAP) services are provided by Resource International Employee Assistance Services (RIEAS). RIPTA engages the services of Newport Alliance and RIEAS through formal contracts that detail the vendors' responsibilities under the program. RIPTA monitors these contracts through regular reporting mechanisms (e.g., quarterly report from RIEAS) and maintains documentation demonstrating that the individuals providing services under these contracts (e.g., MRO Breath Alcohol Technicians, and Substance Abuse Professionals) are appropriately certified.

Conclusions and Recommendations - The analysis included in this section demonstrates that the Transportation function at RIPTA has been continuously understaffed for an extended period of time. This can have a significant impact on RIPTA's operating costs since scheduled service must be covered by an operator and in an understaffed environment, this is typically done using operators making overtime wages.

RIPTA has adopted a policy of hiring vehicle operators as full-time RIde Division operators and follow a progression (if desired) to part-time fixed-route operator and full-time fixed route operator. This seems to be an advisable policy given the experience RIPTA has observed in terms of improved customer service and safety performance of new fixed route operators who started as RIde Division operators rather than starting directly as fixed route operators. Given this employment progression, RIPTA has also adopted the policy of not moving operators from RIde Division to fixed route until all RIde Division operator positions are full. Therefore, fully staffing fixed route Transportation relies on staffing stability in the RIde Division, which was shown in this report not to be the case. Turnover among operators in the RIde Division is extremely high and maintaining full staffing levels has been difficult.

The other issue related to staffing in fixed route Transportation is the accuracy of the headcount being used to staff the function. Right now, staffing levels are based on a headcount number based on budget figures. Also, the scheduling system is used to create a manpower need, but the budget based number and the schedule based number do not always agree. One is not used to determine the other. Lastly, neither of these numbers takes into account employee availability among operators. The Human Resources Department had in the past prepared a Monthly Employee Availability Report that included annual projections for employee availability by category. While this report is still prepared, these numbers are not incorporated into the process for determining the proper headcount by function. Essentially, the task of manpower management is not central to one department and is not being performed in a manner that allows RIPTA to accurately plan and budget for its services.

RIPTA provides an employee benefit package which is consistent with industry practices. One issue regarding these benefits is the fact that RIPTA's cost of providing health insurance coverage is higher than would be expected. Overall health insurance costs have increased from $3,451,011 to $7,817,760 between FY 2001 and FY 2005 with increases in staff size a major factor. This is a doubling of costs (126 percent) in five years not fully explained by staff size increases. Expected increases would be in the 50 percent to 75 percent range over this time period.

The operator training program should be continuously monitored and evaluated. Performance of new drivers needs to be looked at in terms of safety and customer service over the first year of employment and changes should be made to the curriculum. There is currently no skills development program at RIPTA for its various categories of employees.

RIPTA's drug and alcohol testing program meets FTA requirements where RIPTA's own safety sensitive employees are concerned.

RIPTA follows-up regularly with its drug and alcohol program vendors to ensure these entities are meeting FTA regulations, but was not able to demonstrate that certain of its contractors with safety sensitive employees meet FTA requirements. In particular, a review of the random testing rates was inconclusive as to whether all entities that are part of a larger common, DOT pool are testing at the required levels.

In 2003, an Information Technology System Needs Assessment and Implementation Plan was completed for RIPTA. The plan documented the intensively manual nature of the Human Resources function at RIPTA. This affects the organizations ability to identify discipline issues or other staff related problems that affect overall cost in a timely manner. The Needs Assessment document recommended the introduction of an integrated Human Resources Information System (HRIS) and provided detailed descriptions of how many of the functions performed in the Human Resource function could be automated using the HRIS. RIPTA has not implemented those recommendations, and the Human Resources function continues to rely heavily on manual processes.

The following recommendations are offered to address the areas of concern noted above:

- RIPTA should revisit the policy of requiring full staffing in the RIde Division before the ranks of the fixed route division are filled. Since fixed route operators earn more than RIde Division operators, it is less expensive to cover RIde Division runs with overtime than fixed route runs.

- Turnover among RIde Division operators must be addressed. Interviews with RIPTA staff indicate that the most common reason provided by RIde Division operators resigning within a short period of being hired is that the work was not what they expected. RIPTA should enhance the application process to effectively communicate the nature of the work to applicants. This may include a video of a RIde Division run taking place or could be a requirement for finalist candidate to ride along with a Ride Division run for a certain number of hours.

- To minimize cost increases in employee health care benefits, RIPTA should pursue various changes to the plan in subsequent negotiations including: contributions to premiums from early retirees; increased service and prescription copays to be more consistent with national trends; and the introduction of third and fourth tiers within the plan. Since RIPTA follows the State program, this may not be possible unless the State were to change.

- RIPTA should solicit proposals from other vision care providers to determine if a more cost effective product can be obtained to minimize the cost impact of program expansion. Again, since RIPTA follows the State program, this may not be possible unless the State were to change.

- RIPTA should institute a program to continuously review its operator training program. This should include an analysis of the safety and customer service performance of new drivers throughout the first year. Due to the importance of the new operator training function, RIPTA should continue to make use of outside experts in the training field to evaluate and modify training curriculum and techniques.

- RIPTA should develop a comprehensive staff development program including mandatory and volunteer retraining as well as new skills training for both operations and administrative employees. RIPTA should also develop a mechanism for tracking the training that has been completed by each employee.

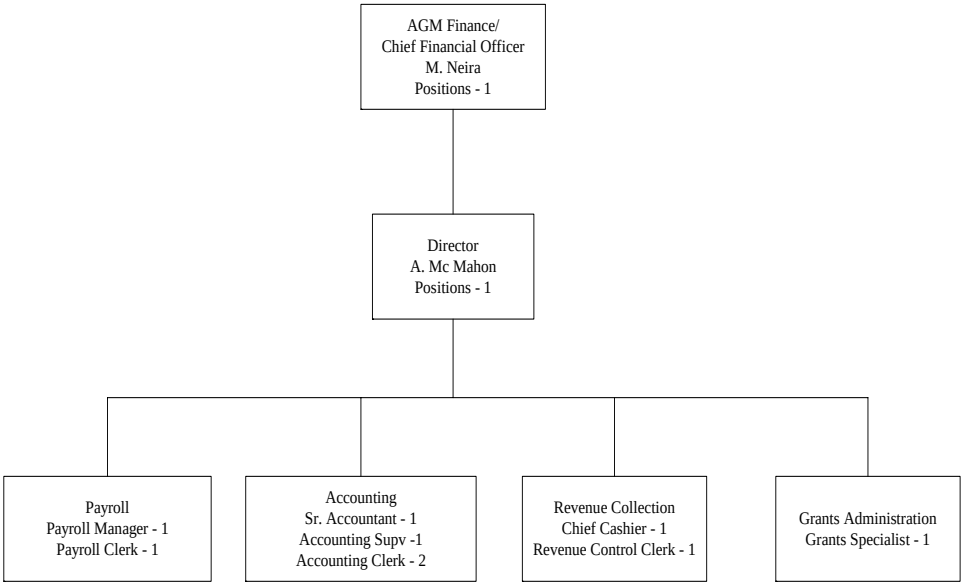
- RIPTA should review the random testing rates for all entities that are part of a larger, common DOT pool to insure that each individual entity meets the requirements.

FINANCE

Organization and Staffing

The Finance Department is responsible for a number of sub-functions, including payroll, accounting, revenue collection and grant administration. The organization of the department is shown in Figure 3.

Figure 3
Department of Finance



The Department is staffed by eleven positions, which are summarized in Table 4. The department is organized into four reporting units that each has responsibility for one of the four sub-functions. In addition to these the Finance Department also is responsible for working with the other departments within RIPTA in relation to a number of activities, including the preparation of the annual budget. The activities of the Finance Department are described below.

Table 4
Summary of Staffing - Finance Department

Position/Title	No. of Positions	
	Budgeted	Actual
AGM Finance/Chief Financial Officer	1	1
Director	1	1
Payroll Manager	1	1
Payroll Clerk	1	1
Sr. Accountant	1	1
Accounting Supervisor	1	1
Accounting Clerk	2	2
Chief Cashier	1	1
Revenue Control Clerk	1	1
Grants Specialist	1	1
Total	**11**	**11**

Budgeting

The preparation of each fiscal year's budget begins in the March/April timeframe of the fiscal year that is two years prior. For example, the budget for the fiscal year beginning July 1, 2008 begins in March/April 2006. A timeline illustrating the FY 2007 budget cycle is presented in Figure 4.

The budget is entered into the Government/Management and Budgetary Accounting (GMBA) program in the AS400 system. Although each department in RIPTA is responsible for preparing its own budget, the Finance Department assembles the information in GMBA and provides technical support in preparing the Authority's overall budget. As shown in Figure 4, the budget cycle consists of the following steps:

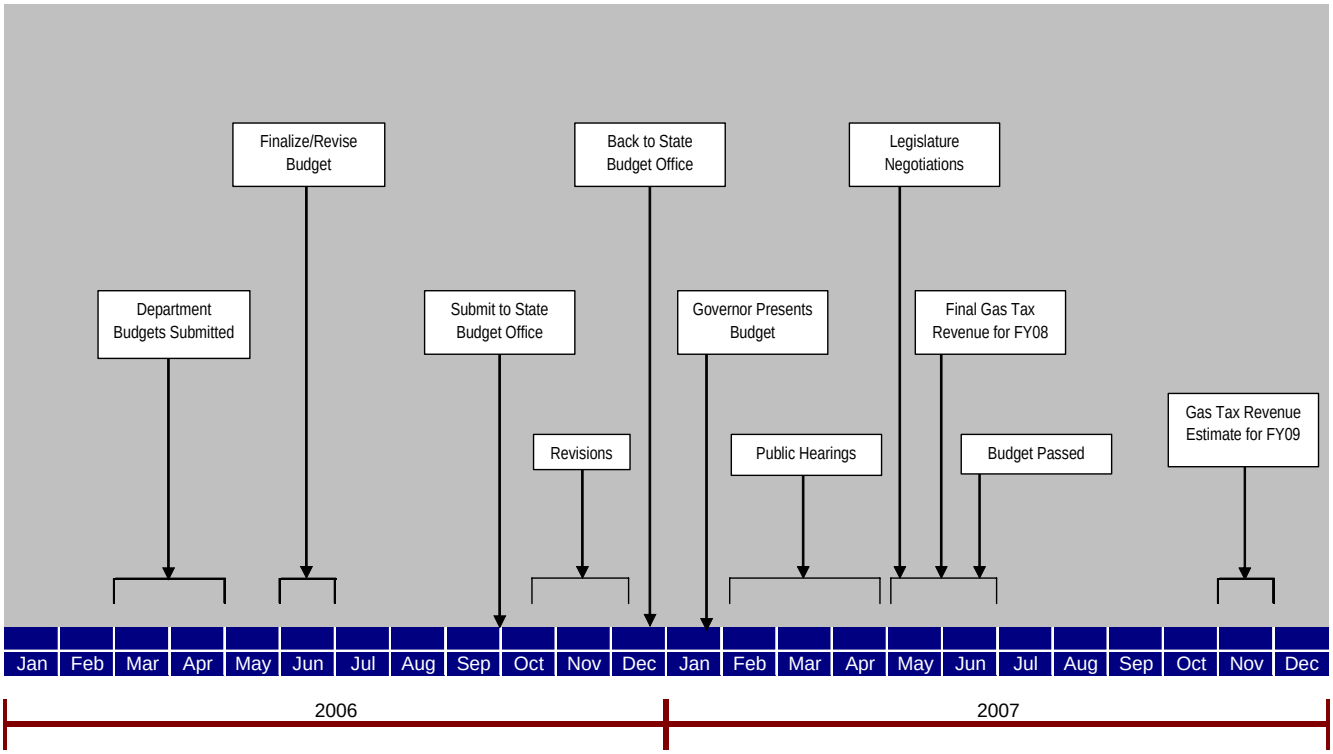
- Each department prepares its own preliminary budget in March/April for the fiscal year that is two years hence.

- Through May and June, the Finance Department reviews the departmental assumptions for expenses (e.g., wage increases, inflation adjustments and service changes) and prepares funding estimates based on the estimated revenues (e.g., gas tax, fare revenue and grant funds).

- Before October 1 of each year, the final budget is ready to be submitted to the State Budget Office. The State Budget Office may require revisions to the budget. In which case, it is revised and sent back to the State Budget Office by the end of December.

- By the third week of January, the Governor presents the budget to the legislature and public budget hearings are held from February through April.

Figure 4
RIPTA Budget Timeline - FY 2008



- During May and June, the legislature may go through a series of budget negotiations. Also, the final Gas Tax Revenues for the fiscal year have been calculated by this time.

- The budget is usually passed in June in order to ensure continuity of funding for the fiscal year to begin on July 1.

RIPTA's sources of funding to support operating expenses include a mixture of state gas tax funding, state and local general revenues and federal grant assistance. Rhode Island's state gas tax is currently 30¢ per gallon. Of this amount, RIPTA receives the following:

- 7¼ ¢ for general purposes;
- 79 percent of 1¢ to support reduced fares and cover paratransit service for senior citizens; and
- 21 percent of 1¢ is retained by the Rhode Island Department of Elderly Affairs (DEA) to partially fund specialized paratransit services for the elderly.

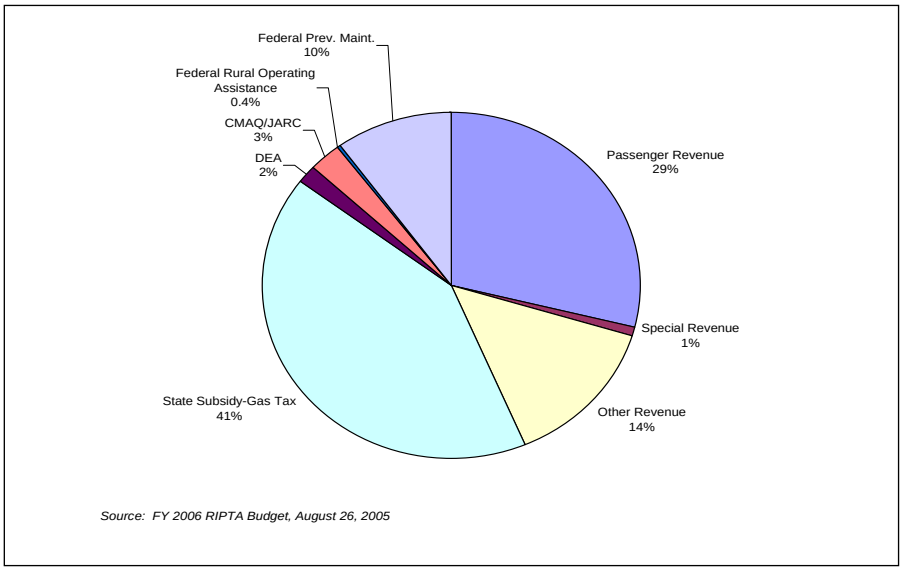
RIPTA also uses some of its FTA Urbanized Area Formula Grant (Section 5307) funds to support preventive maintenance expenses. RIPTA's operating budget for FY 2006 is summarized in Table 5 and operating revenues are summarized in Figure 5. As shown in Figure 5, the largest component of RIPTA's operating funds come from gas tax revenues (41 percent) followed by passenger fare revenue (29 percent). The next largest component comes from other revenue (14 percent), which consists mostly of paratransit revenue and also includes interest income, centralized maintenance reimbursement, ferry revenue, and federal operating reimbursement. It should be noted that RIPTA can use a portion of its Section 5307 formula funds as operating assistance on a declining basis for three fiscal years. This provision in the federal law sunsets with FY 2008 apportionments. FTA preventive maintenance funding (Section 5307) represents approximately 10 percent of RIPTA's FY 2006 budget. The remainder comes from CMAQ/JARC funding (three percent), DEA paratransit revenues (two percent), special revenues (one percent) and federal rural operating assistance (0.4 percent).

Table 5
Summary of FY 2006 Operating Budget

	Amount	Percent
EXPENSES:	82,808,489	100.0%
REVENUES:		
Passenger Revenue	$23,957,546	28.9%
Special Revenue	$545,415	0.7%
Other Revenue	$11,624,695	14.0%
State Subsidy-Gas Tax	$34,510,000	41.7%
DEA	$1,260,400	1.5%
CMAQ/JARC	$2,290,000	2.8%
Federal Rural Operating Assistance	$320,432	0.4%
Federal Prev. Maint. (Section 5307)	$8,300,000	10.0%
Total	**$82,808,488**	**100.0%**

Source: FY 2006 RIPTA Budget, August 26, 2005

Figure 5 - Summary of FY 2006 Budgeted Revenues



Payroll

RIPTA's payroll procedures are guided by the *Payroll Procedures Manual.* The majority of the activities are carried out by the Payroll Office. However, some responsibilities are also shared with the Human Resources Department (e.g., determining salary and benefits, approving rate changes and approving retirements) and the Accounting Office (e.g., posting payroll to the General Ledger, making payments for taxes, union dues and health care premiums).

RIPTA employees are paid on a weekly basis. For hourly wage earners, the employee timesheet data are entered daily into the Transportation Operations program on the AS400 system. Salaried employees' payroll is processed separately, but also on a weekly basis. The weekly activities consist of the following:

- Timesheet/time card entry;
- Verifying hours;
- Entering supplemental checks;
- Entering garnishments;
- Entering vacation advances (2 weeks out);
- Entering holiday pay (when applicable);
- Printing checks/direct deposit slips; and
- Weekly reports/registers submitted to Finance.

In addition to the weekly activities the Payroll sub-function also carries our monthly, quarterly, mid-year and year-end (calendar and fiscal) activities. Monthly activities include printing time cards, creating check reconciliation files and closing the months. Quarterly activities include processing medical incentive payments, preparing and submitting IRS 941 and other reports. During December the Payroll staff calculate vacation and sick time accruals, and begin preparing W-2 files and updating tax tables for the coming calendar year. In January, the W-2 forms are prepared and printed, and employee benefits are updated. The fiscal year is closed at the end of June.

Accounting

The accounting sub-function is the responsibility of the Accounting Office. The Accounting Offices is responsible for maintaining and reconciling the General Ledger, handling accounts receivable and cash management activities, and handling accounts payable. These activities are addressed in the *Finance and Accounting Policy & Procedures Manual*.

General Ledger Accounting - The General Ledger is part of the GMBA program in the AS400 System. Through the General Ledger accounting, the Accounting Office is able to reconcile bank transactions as well as RIPTA's balance sheet accounts. Reports on budget variances are produced on a monthly basis and are reviewed by the General Manager and the Board of Directors. The General Ledger activities also include reconciling accounts for paratransit services provided by RIPTA on behalf of other agencies. At the end of each fiscal year, the Accounting Office closes-out the books and prepares for the annual financial audit.

Accounts Receivable and Cash Management - The accounts receivable and cash management activities are recorded as journal entries in the GMBA program. Accounts receivable posts the receipt of miscellaneous revenues (e.g., receipts for the sale of fare media and advertising revenue) and also prepares invoices for billings for reimbursement for services provided to external entities (e.g., RIde services funded by DEA). Accounts receivable also handles reimbursements from the Rhode Island Department of Transportation (RIDOT) for the Express Travel program, other miscellaneous grant-related programs and repairs to RIDOT vehicles performed by RIPTA.

Accounts Payable - Accounts payable activities include the payment of vendor invoices, recurring expenses (e.g., utilities) and pre-payment of expense items requested by RIPTA staff. For purchases that originate with a purchase order, the Accounting staff works with the Procurement Department to verify receipt of goods and/or services. Other invoices come directly to Accounting and are processed for payment. These invoices may be sent directly by vendors or may be sent by another RIPTA department, which reviews the invoice and enters a voucher request into the system. Other activities performed under accounts payable include employee reimbursement for travel expenses, processing IRS Form 1099's for service providers and processing advances for errors in payroll checks.

Revenue Collection

Passenger fare revenue is collected through RIPTA's Money Room. RIPTA has specific policies and procedures that guide the Money Room activities. The policies and procedures address the vault pulling activities at the Elmwood Avenue and Newport garages as well as the daily accounting of paratransit fare revenues, which are recorded and reconciled at the RIde Office. The Money Room personnel count revenue at the Elmwood facility daily, which is recorded and secured as part of the daily deposit. Revenue received through the Newport facility is counted and reconciled two days per week and the deposit is prepared for armored car pick-up. The inventorying and billing of fare media (i.e., passes and Riptiks), consignment sales and RIte Care billing is the responsibility of Accounting.

Grant Administration

RIPTA is the designated recipient of certain FTA funds for the State of Rhode Island. RIPTA follows FTA's guidance for the application and management of grant funds as specified in FTA Circulars 9030.1C and 5010.1C, respectively. The Finance Department works with the Planning Department in administering RIPTA's grants. The Planning Department is responsible for developing the grant projects, and writing grant applications, whereas the Finance Department, in particular the Grant Administration Office, is responsible for the financial aspects of the grant activity including requesting reimbursement through the federal government's Electronic Clearing House Operation (ECHO) and progress reporting. The Grant Administration office ensures that reimbursement requests are for expenses that have been incurred and that, when required, funds are disbursed to vendors and contractors within three business days.

Other Activities

RIPTA's Finance Department works cooperatively with a number of other departments. As previously mentioned the Finance Department works with the Human Resources Department to coordinate certain payroll activities and works with the Planning Department in administering grant programs. The Finance Department also works with the Purchasing Department to manage RIPTA's inventory of spare parts as well as the inventory and disposal of fixed assets. Finance works with the Planning Department in relation to real property management and disposal, in particular when reimbursement is required of any federal share in a RIPTA controlled property.

Conclusions and Recommendations - RIPTA Finance Department's activities are guided by the *Finance and Accounting Procedures Manual*. In addition to this overarching document, there are a number of other policies and procedures that deal specifically with various sub-functions, including revenue collection procedures and payroll procedures. RIPTA's financial activities appear to have an appropriate segregation of duties and adequate internal controls.

Financial audits for Fiscal Years 2003, 2004 and 2005 did not identify any materials weaknesses or reportable conditions related to RIPTA's internal control. Furthermore, the single audits for the same years did not identify any questioned costs or issues related to compliance with federal requirements described in the U.S. Office of Management and Budget (OMB) Circular A-133. Areas in which there were opportunities for RIPTA to strengthen its internal controls and operating efficiency were identified by the auditors in letters to RIPTA management in each year. In each year, RIPTA management responded to each of the recommendations that were made.

No recommendations are offered in relation to the Finance Department's activities.

FIXED ROUTE TRANSPORTATION

This section provides a comprehensive review of the fixed route transportation function at RIPTA. This includes an assessment of organization, personnel and labor relations as well as on street operations at both of RIPTA's operating depots.

Overview

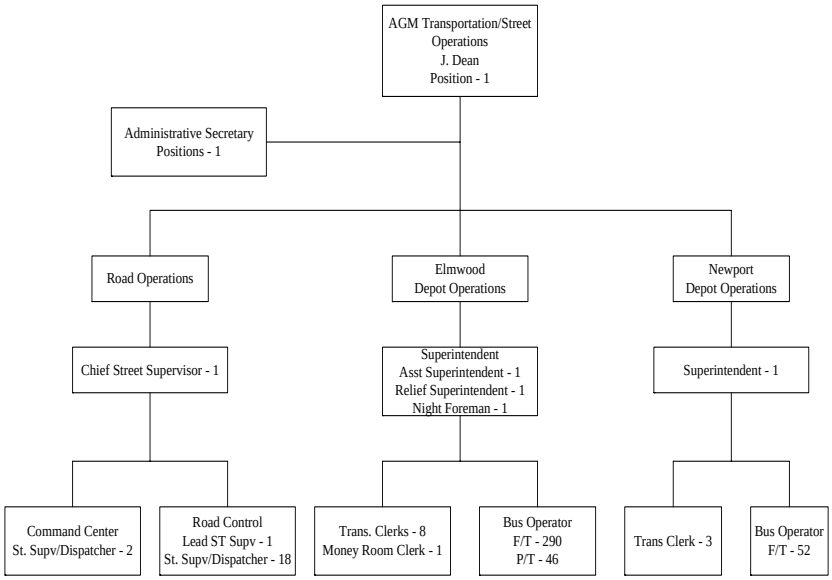
The RIPTA fixed route Transportation Department staff performs almost all of the transit system's activities related to the operation of fixed route bus services at two separate operating garages. This includes the day-to-day staffing and operations of all scheduled fixed route bus service.

All transportation functions and the transportation employees of both depots are organizationally within one department. This includes bus operators, dispatchers, street supervisors and transportation clerks. This section provides a detailed description of the management structure, policies, procedures and assets RIPTA uses to perform the fixed route transportation function.

Organization

The Transportation Department (fixed route Transportation) is the largest department within the RIPTA organization. The department is headed by the Assistant General Manager (AGM) for Transportation who reports directly to the General Manager. The department is organized into three separate divisions including Elmwood Depot Operations, Newport Depot Operations and Road Operations. The organization of the Transportation Department is shown in Figure 6.

Figure 6
Fixed Route Transportation



Elmwood Depot Operations is the largest of the three divisions and is headed by a Depot Superintendent who reports to the AGM for Transportation. The Elmwood Depot Supervisor is responsible for the tasks necessary to administer RIPTA's fixed route operations based out of the Elmwood Depot on Elmwood Avenue in Providence. These tasks will be described in detail in this section of the report. To assist the Depot Superintendent in administering this function are one Assistant Superintendent, one Relief Superintendent, one Night Foreman and eight Transportation Clerks. In addition to the administrative staff, Elmwood Depot Operations currently includes 283 full-time and 26 part-time bus operators.

Newport Depot Operations performs the same function at RIPTA's Newport Depot located in Middletown. Newport Depot Operations is headed by a Depot Superintendent who reports to the AGM for Transportation. The Depot Superintendent has an administrative staff of three Transportation Clerks. Newport Depot Operations also currently includes 44 full-time bus operators.

Road Operations is responsible for the dispatch and street supervision functions. This function is centralized at the Kennedy Plaza transit center in downtown Providence where the Command Center is located. All fixed route service is supervised from the Command Center. This division is headed by the Chief Street Supervisor who reports to the AGM for Transportation. To perform this function, the Chief Street Supervisor has a staff of one Lead Street Supervisor and 20 Street Supervisor/Dispatchers. A more detailed analysis of the staffing and work performed by this division is provided later in this report.

Facilities

As mentioned above, RIPTA bus operations are based at two operating depots. The chart below lists the operating depot, the location and the number of bus operators assigned to the location.

		Bus Operators	
Depot	**Location**	**Full Time**	**Part Time**
Elwood	Elwood Avenue, Providence	283	26
Newport	Coddington Highway, Middletown	44	0
Total		**327**	**26**

As the chart shows, RIPTA employs a total of 327 full-time and 26 part-time fixed route bus operators. The Elmwood Deport is the base of a significant majority of RIPTA fixed route service as evidenced by the staffing level.

A detailed description of the operating depots and their ability to accommodate the level of vehicles and service assigned to them was addressed in the review of the vehicle maintenance function. The only other issue to address is the appropriateness of the space dedicated to the Transportation function at both of these facilities. The Elmwood facility is equipped with office space for the AGM for Transportation as well as the Depot Superintendent and the remainder of the Transportation administrative staff. The Depot building also contains a driver report area as well as a driver break room. The space allocated to each function is sufficient. Similarly, the Newport Depot building contains office space for the Depot Superintendent and the Transportation administrative staff. The building also contains a driver report/break area. Again, the amount of allocated space is sufficient.

The upkeep of the operating facilities described above is the responsibility of the Buildings and Grounds Division of the Vehicle Maintenance Department. This includes the day to day cleaning of the Transportation areas. Based on observations, the facilities seemed clean and well kept.

Personnel and Labor Issues

This section discusses various issues relating to the training of RIPTA bus operations staff as well as key components of labor contracts between RIPTA and the union representing its bus operators.

Operator Training - Before operating revenue service, each new RIPTA bus operator completes a training program. The program is administered by the Training Department which is part of the System Safety and Security Department of RIPTA. The department is headed by the Lead Trainer who reports to the Chief of Safety who, in turn, reports to the AGM for Environmental/Safety and Security. The Lead Trainer has a staff of one full-time trainer and, when necessary, a bus operator on temporary assignment to the Training Department.

The training program starts as new bus operators are hired in reaction to current or known upcoming vacancies. Due to the vehicle operator hiring practices of RIPTA, most fixed route operators are hired from RIPTA's Flex Division and, therefore, have a Commercial Driver's License (CDL) and some driving experience. The current training program for fixed route operators includes twenty days of classroom and on-road training. If a new fixed route operator does not have air brake qualifications, an additional week of training is included. Training of new operators does not include any follow-up training such as regularly scheduled "ride-alongs" in which a Trainer will ride with a new operator at certain intervals after the operator has completed training.

During the on-vehicle training, generally one instructor and three students will be assigned to each vehicle. Operators are trained on all aspects of bus operations including the vehicles, schedules, fare policies and equipment, necessary reports, customer service, ADA requirements as well as all RIPTA routes.

The Training Department also trains operators on all new equipment to be used in RIPTA operations. This represents all of the training RIPTA operators typically receive after the initial training.

The Training Department, in the past, has not developed or conducted any mandatory retraining or refresher training courses for bus operators. The training that RIPTA operators have typically received beyond the initial training is training on new equipment such as buses or wheelchair lifts, route training three times per year and ADA training. This training is also provided by the Training Department. All other retraining of operators is performed in reaction to certain situations. Operators who have been involved in a certain number of preventable and chargeable accidents are required to undergo retraining with the Training Department. Also, if the AGM for Transportation of the Chief of Safety identifies a problem with a particular operator, they can request to have a Trainer ride with that operator to assist the operator in addressing the issue.

RIPTA recently procured the services of an outside training expert to develop a defensive driving skills retraining course for its Flex Division. RIPTA plans to offer that training course to its fixed route drivers as well. Other than this, there is no defined retraining program for RIPTA fixed route operators other than training in reaction to identified problems.

As discussed in the review of the Human Resources function, RIPTA does not regularly analyze the effectiveness and appropriateness of the curriculum followed for either the initial operator training or any retraining performed. This type of analysis may include a review by an outside expert, a review of the policies of peer transit properties as well as an analysis of the performance of new or retrained drivers. This type of analyses would allow RIPTA to continuously redefine its training program to ensure effectiveness and enhance system safety and quality.

Wage Rates - For vehicle operation, RIPTA enters into contracts with one union that represent the authority's bus operators. This is the Amalgamated Transit Union - Local 618. The current three-year contract, which was never officially ratified, expired in December of 2005. However, RIPTA and the union have agreed to continue working under the conditions of the contract. The contract called for wage increases of three percent annually. The chart below provides the starting and top hourly rate for both fixed route and Flex Division drivers as of January 1, 2006.

	Full Time	
Division	**Starting Rate**	**Top Rate**
Fixed Route Division	$13.21	$22.02
Flex Division	$10.35	$14.31

Along with wage rates, the contract stipulates the wage progression from starting to top rate in terms of the length of employment. The chart on the following page provides the wage progression for fixed route drivers.

Length of Employment	% of Top Rate
First 12 months	60%
Second 12 months	70%
Third 12 months	80%
Forth 12 months	90%
Fifth 12 months	95%
After 5 years	100%

As the chart shows, RIPTA's fixed route operators must be employed as an operator with RIPTA for five full years before they reach the top wage rate. It is common in the transit industry to incorporate a wage progression schedule such as this into labor contracts. RIPTA's is a slightly more protracted schedule than what is generally used in the industry. In many cases, operators reach the top wage rate at the end of the third year of employment. Also, starting wage rates are generally between 70 and 80 percent of the top rate.

It is difficult to say what is the recommended structure. It can be argued that protracted schedules encourage longevity and reduce operating costs while some transit properties find long wage progression timetables to hinder recruitment of quality employees. Among fixed route drivers, recruitment has not been an issue.

The contract also establishes a wage progression schedule for the Flex Division that is based on pegged rates rather than percentages of the top rate. Similar to the fixed route operators, Flex Division operators require five full years of employment to reach the top rate. This may be affecting RIPTA's ability to attract Flex Division drivers. As mentioned in the Human Resources section of this report, turnover at the Flex Division is very high which affects staffing in the fixed route division as well.

In terms of other pay rules, the latest contract with the ATU was examined to determine if the more common pay rules that can have major impact on a transit agency's operating costs are in line with general industry practices. Below is a comparison of the stipulations regarding these rules in the RIPTA contract as compared to contract stipulations generally used in the transit industry.

- **Report/Turn-In Time -** RIPTA pays drivers for 10 minutes of report time at the beginning of each driver run and nothing for turn in time at the end of a run. This is in keeping with standard industry practices in which operators are generally paid 10 minutes of report time and anywhere from 0 to 10 minutes of turn-in time.

- **Overtime Policy -** According to the contract between RIPTA and the ATU, an overtime pay premium of "time and one half" is paid for each hour of platform service that exceeds 40 hours per week. The RIPTA contract further classifies any platform time performed over eight hours in one day as overtime. This 40 hours per week and eight hours per day practice is common among transit agencies.

- **Spread Time -** The RIPTA contract stipulates that a pay premium of one-half time is paid for every minute of scheduled spread time in excess of 10 hours and 15 minutes. The spread time premium increases to the full straight time wage for every minute of spread time between 12 hours and 12 hours and 30 minutes. Spread time cannot exceed 12 hours and 30 minutes. Under certain circumstances, however, RIPTA can schedule runs with spread time of 13 hours and 30 minutes. It is typical among industry contracts between management and labor to assign a premium pay for any scheduled spread time exceeding ten to 12 hours. Many contracts also stipulate that total spread time cannot exceed 12 or 13 hours as does RIPTA's. A sliding scale spread time premium is also common.

- **Split Runs -** For the purposes of transit scheduling, split runs are defined as runs that include a break period that is not paid and is not included to comply with any law or governmental requirement. Split runs are necessary in transit scheduling due to the variations in service requirements between the peak and off peak periods throughout a service day. RIPTA's contract with the ATU states that no more than 40 percent of all schedule runs should be split runs but split runs cannot exceed more than 50 percent of all runs. Also, the contract stipulates that no more than 66 percent of total AM runs can be split runs. While any limitation on the number of split runs allowed can inhibit scheduling flexibility, RIPTA's percentage allowance is reasonable when compared with other transit labor agreements.

As this discussion shows, in the aggregate, components of the RIPTA labor agreements are generally consistent with contracts made between management and employees throughout the transit industry.

Vacation - According to the RIPTA's labor contracts, operators accrue vacation time along with years of employment. The chart on the following page provides the vacation accrual schedule for fixed route operators.

Completed Years of Employment	Weeks of Vacation
1	1
2	2
4	3
10	4
15	5
25	6

This vacation accrual schedule is common when compared to vacation stipulations in labor contracts throughout the industry.

Sick Leave Benefits - RIPTA bus operators, as is common in the transit industry, accumulate sick days that can be used by the employee for illness but are unpaid unless the period of illness is longer than one day and long-term sick leave is specifically requested by the employee. The first day of each and every disability is termed a "waiting period" and is paid only under certain circumstances. Any claim for each and every sick day must be certified by a licensed medical doctor or dentist on a RIPTA disability form. Operators accumulate 12 sick days annually. Sick days can be accumulated and accumulation is unlimited. These accumulated sick days can be used for paid sick benefits that must be requested by the employee. Employees who will be absent from work for extended periods of time, whether paid of unpaid, must update their supervisor of their status every seven days. For each day of sick leave, the employee is paid eight hours of straight time pay. This sick leave policy is in line with industry practices.

Two provisions in the contract regarding sick and disability leave which can have a significant effect on RIPTA's costs are the definitions of who is eligible to continue receiving the benefits of the contract while on leave. The contract stipulates that any employee who is absent as a result of illness, injury or work-related injury that occurs during the period while he is employed by RIPTA will be considered in active service under the terms of the contract as long as the continuous period during which he does not perform work does not exceed one year. Also, employees with continuous employment with RIPTA of 15 years or more who is unable to work due to sickness, injury or work related injury can continue receiving individual health care coverage and pensioner's Life Insurance Benefits as stipulated in the contract for as long as the disability continues.

Operator Availability - The peer group analysis prepared as part of this review indicated that RIPTA's performance in terms of vehicle hours per employee dedicated to the vehicle operations function was below its peers. As the review pointed out, this can affect RIPTA's overall productivity and cost efficiency. Average availability among bus operators is a significant contributor to this performance. As will be described later, RIPTA dedicates a substantial effort to covering vacant operator runs on a daily basis, many of which must be covered by operators on their days off for overtime wage rates.

All of the contractual and legal provision discussed above can affect RIPTA's overall operator availability. That is, how many of the employed operators are available on any given day to actually operate scheduled service. RIPTA does not calculate or analyze operator availability on a regular basis. Annual data for the past five years was assembled for use in this analysis. However, it should be noted, that the data needed to assemble such a database are recorded and readily available.

While RIPTA has tabulated this data on an annual basis, ideally this should be calculated using figures from a sample of weeks. Analyzing the data on a weekly basis allows for a determination of how many bus operators were scheduled to work on each day of the week and compare that to the number who did actually work. For the purposes of this anlysis, a total annual number of bus operator work days was calculated. This calculation was based on the assumption of 327 full-time operators with 245 annual work-days (about 5 days over 49 weeks) and 39 part-time operators with 199 annual work-days (about 4 days over 52 weeks). Table 6 below provides a summary of the major categories of lost time in terms of total work-days lost, an equivalent headcount and the percent of the total annual bus operator work days that represents for calendar year 2005.

Table 6
2005 Lost Time by Category
Bus Operators

Total Bus Operator Work Days (Annual)		87,876	
Lost Time Category	**Days Lost**	**Headcount Equivalent**	**Percent of Total Days**
Sick (Long Term & Short Term)	8,074	32.9	9.2
Vacation	6,500	26.5	7.4
Personal Time	439	1.8	0.5
IOD (Workers Compensation)	1,196	4.9	1.4
Excused – Governmental Mandate	515	2.1	0.6
Excused – Contractual	150	0.6	0.2
Disciplinary	194	0.8	0.2
Total	**17,068**	**69.6**	**19.5**

As Table 6 shows, the largest absence category of lost time is sick leave. The chart shows that RIPTA lost 8,074 operator work-days to long term and short term sick leave in 2005. This represents 9.2 percent of total operator work-days. This also indicates that on any given day throughout 2005, an average of 32.9 operators were out on long or short-term sick leave. Industry benchmarks suggest that long-term sick leave should represent less than five percent of qualified personnel and short term sick leave should be no more than 2 to 3 percent of qualified personnel. This would suggest that a combined total of 9.2 percent is considered high and anything above indicates an issue of concern. At a combined total of 9.2 percent, sick leave is an issue among RIPTA bus operators. Another issue is the fact that individual operator attendance is not regularly analyzed to identify any problems. Attendance is investigated on an ad-hoc basis when suspicious trends come to the attention of the AGM for Transportation.

Also, at 7.4 percent of total work-days, the amount of time lost due to vacation is within normal parameters. As mentioned above, RIPTA's vacation accrual schedule is comparable to general industry practices. Another reason to track this data on a more regular basis is to track operators absences during the summer when vacation use is higher as well as during the remainder of the year.

Another concern regarding employee availability in the transit industry is the number of employees out of work on Injured on Duty (IOD) leave or Worker's Compensation. RIPTA tracks the number of employees who are out on short term as well as long term IOD in one combined total. During 2005, 1,196 days were lost to IOD leave that represents 1.4 percent of total work-days or an average of 4.9 operators at any given time throughout the year. In comparison to observed rates throughout the industry, RIPTA's rate would be considered a little high compared with the normal range of one percent or less.

The other categories listed in the chart include "Excused – Contractual" which includes family bereavement days and union business, "Excused – Governmental Mandate" which included Family and Medical Leave Act, Military Duty and Jury Duty, "Personal Time" which represents earned personal days off and "Disciplinary" which represents suspensions. All of these categories represent very small percentages of qualified personnel and none represent an issue of concern.

Overall, as the chart above shows, approximately 19.5 percent of RIPTA's operators are not available to perform service on any given day. While this may seem high, it is important to remember that a significant portion of these employees are absent due to vacations or earned days off.

To determine the trend in sick leave and IOD lost time, the data for bus operators was tabulated for each calendar year from 2001 to 2005. Table 7 below provides the total number of days lost for both sick leave and IOD as well as the days lost for that category per operator and the equivalent headcount that represents.

Table 7
Bus Operator Lost Time Trend
2001 - 2005

Lost Time Category	2001	2002	2003	2004	2005
Bus Operators	386	384	408	383	366
Sick Time					
Days Lost	12,249	12,576	11,648	9,039	9,270
Days Lost per Operator	37.7	32.7	28.5	23.6	25.3
Equivalent Headcount	47.1	48.3	44.8	34.7	35.6
IOD (Workers Compensation)					
Days Lost	862	2,736	3,640	2,106	1,196
Days Lost per Operator	2.2	6.2	8.9	5.5	3.3
Equivalent Headcount	3.3	7.1	14.0	8.1	4.9

As Table 7 shows, RIPTA's performance in terms of sick time lost among bus operators has improved between 2001 and 2005. Total days lost, days lost per operator and equivalent headcount all decreased regularly between 2001 and 2004. However, the fact that all three measures are slightly higher in 2005 than in 2004 suggests that this does not represent a continuing trend of improvement. Over the past five years, the amount of time lost to IOD leave peaked in 2003. During that year, RIPTA's IOD experience would be considered high but the level in the other years remained within acceptable levels.

On-Street Operations

The main function of Fixed Route Transportation is to ensure that scheduled service is operated and that quality service is provided. This on-street operations function requires the performance of various tasks including covering service assigned to depots as well as service supervision and control. This section provides a detailed description of how these tasks are performed within the RIPTA organization.

Management of Daily Operations - As mentioned above, each of RIPTA's two operating depots is assigned a staff of Transportation Superintendents and Clerks. These staff persons are responsible for ensuring that each of the operating runs assigned to the depot are covered on a daily basis. Also, they are responsible for tracking and preparing payroll information each week as well as completing any paperwork necessary in the management of the operations staff.

In terms of daily operations, one of the most important functions of the Transportation administrative staffs is to ensure that a sufficient number of operators are available to cover each of the runs assigned to the district and that an operator is available to operate the service. The first step in this process involves identifying the work that will need to be covered due to operator absences known in advance. The first step in this process is to consult the Vacation Log. This list of open work is then posted on Sunday of the week prior to the known absence. Spare operators can then bid on the open jobs. Spare operators must bid on an open job by 7 AM on that Thursday.

Any open work due to vacations that has not been posted to by spare operators must then be filled on a daily basis. To identify the work that must be filled on a daily basis, the Assistant Superintendent lists the open work due to vacations and vacant work reported through the Absentee Cards. This list is then adjusted by referring to the report that lists operators who are due to return to work. This list is then made available for selection by Extra Board operators at 8:30 AM the day prior to service. Extra Board Operators can bid on any of these open jobs by seniority until 11:00 AM. The list is also updated as operators report out for the following day. Operators can report out until 11:00 AM the day prior to service. Any open jobs not selected by Extra Board drivers are then offered to full-time operators on their days off (6^{th} and 7^{th} day) for overtime. To cover any remaining work, split shifts will be broken into parts. As a final step, open work is assigned to the "stated reports" or "protection assignments" which are Extra Board runs.

The intensity of this effort is significantly affected by operator availability. Vacations and long term sick absences are known ahead of time and can be planned for. However, short term absences can be a significant impediment to predictable operation. Not only does this require a full staff person to monitor and administer, covering work with operators at overtime wages is highly costly to RIPTA. However, RIPTA has chosen to cover scheduled work at higher wage rates rather than jeopardizing the reliability of the service. Given its operator availability, RIPTA covers an average of 650 shifts per month with "reports", that is, operators on their days off for overtime wages. This is an average of approximately 22 jobs per day. As a result of this effort to cover scheduled work, a two-month sample of missed service data showed

that RIPTA missed an average of only 6 scheduled trips (scheduled trips as opposed to operator jobs) due to a lack of available operators. While this improves RIPTA's reliability from the passenger's standpoint, this policy is costly. Using reports to this extent is a prime contributor to RIPTA's high ultimate pay to platform ratio which, as noted in the Planning and Scheduling review, is often as high as 1.299. The review of Planning and Scheduling showed that the actual pay hours figure for any given week is often as high as 18 percent above the level expected based on the schedule.

Use of Extra Board or spare operators is a tool that is used by transit agencies to cover scheduled work without the need to rely on operators on their days off. Currently, RIPTA's contract with ATU 618 stipulates that there be one Extra Board operator job for every 13 regular jobs. Typically, agencies with an operation the size of RIPTA's will have one extra board position for every ten regular positions (10 percent). It is common for agencies to have a larger ratio in the contract with its union to allow itself leeway if costs restrict their ability to add extra board positions. However, in practice, agencies will generally have larger extra boards than is stipulated in the contract. While RIPTA does take on extra spares during the heavy vacation season, the consistent extra board remains at a 13 to 1 ratio. When the extra board is too small, there tends to be an over reliance on reports. The above-mentioned figures would indicate that RIPTA is too reliant on reports.

Another factor affecting the need to use reports to such an extent is the level of overall staffing of fixed route operators. As noted in the Human Resources section, RIPTA has been consistently 10 to 19 fixed route operators short of the budgeted headcount over the past two years. This is due to various factors including the practice of hiring all operators as Flex Division operators and moving them over as fixed route drivers after a particular period. A self-imposed hiring freeze in 2005 also affected this situation.

While the use of operators on 6th and 7th day reports is extensive, there seems to be no feedback loop in terms of the Transportation function's performance against budget. While detailed records of the amount of time and one-half overtime hours and double time overtime hours are kept by payroll, there is no differentiation between scheduled and unscheduled overtime. The level of unscheduled overtime is not tracked or reported in any regularly occurring format.

Besides assigning operators to open work to assure that scheduled work is operated, the Transportation Department also tracks the level of missed scheduled trips due to other reasons and the reason for the lost service. A review of a two-month sample of data showed that RIPTA failed to operate an average of 102 out of 80,665 monthly trips. This represents 0.13 percent of its scheduled bus trips. Typical operating standards in the transit industry call for a missed trips rate of 0.50 percent or better, that is, no more than one out of every 200 trips. At 0.13 percent, RIPTA misses roughly one out of every 913 scheduled trips on average. This is an excellent performance in this measure. Review of the records showed that mechanical problems are the most significant cause of lost service, accounting for 55.4 percent of missed trips. This is followed by accidents that account for 24.6 percent of lost service and staffing which accounts for 9.2 percent.

Service Supervision and Control - As mentioned above, supervision of all RIPTA's on-street fixed route bus service is centralized in the Road Operations Division of the Transportation Department. The street supervision and dispatch functions are combined at RIPTA. A pool of Street Supervisor/Dispatchers chooses from various street supervisory or dispatch jobs through three picks throughout the year. The Chief Street Supervisor directs the street supervisory/ dispatch function for fixed route bus service with a staff of 21. This staff includes a Lead Street Supervisor and 20 Street Supervisor/Dispatchers. The function is located at the Command Center in the Kennedy Plaza transit center.

There is no specified training curriculum established for new Street Supervisor/ Dispatchers. Typically, when new Street Supervisor/Dispatchers are hired, they will receive training regarding the equipment in the dispatch area (i.e., console, radio, computer software). They will also be trained on all of the administrative functions of the Transportation area. If needed, they will receive training regarding RIPTA routes. New Supervisors also receive training regarding the Americans with Disabilities Act requirements. Finally, new Street Supervisor/Dispatchers will receive on the road training with another supervisor.

In terms of Street Supervisor/Dispatch staffing, one Street Supervisor is assigned to Newport during the day. The remainder report and work out of Kennedy Plaza. Dispatch calls from all RIPTA fixed route buses, including Newport services, are handled by the dispatchers in the Command Center at Kennedy Plaza. The chart below provides the number of supervisors assigned to time period throughout the service day along with the corresponding number of vehicle runs operating at that time. Table 8 provides figures for the AM peak period (8:00 PM), the base of the midday period (1:00 PM), the peak of the afternoon school related demand (3:30 PM), the PM peak (5:15 PM) and the evening period (8:00 PM).

Table 8
Street Supervision and Dispatch Staffing

Service Period	Vehicles in Operation	Street Supervisors	Vehs. per Supervisor	Dispatchers	Vehs. per Dispatcher
AM Peak (8:00 AM)	188	4	47	2	94
Midday (1:00 PM)	117	5	24	1	117
School Peak (3:30 PM)	180	6	30	2	90
PM Peak (5:15 PM)	179	6	30	2	90
Evening (8:00 PM)	62	2	31	1	62

As the chart shows, the ratio of vehicle runs to Street Supervisor is 47 to 1 during the peak of the AM peak operating hours, 24 to 1 during the base of the midday, 30 to 1 at 3:30 PM which represents the peak of afternoon school student demand, 30 to 1 during the PM peak and 31 to 1 during the evening. A general industry rule of thumb is that there should be one street supervisor for every 50 vehicles in operation. This standard would suggest that RIPTA is overstaffed during each period of the day except the AM peak.

Some of what may be considered overstaffing in the peak periods could be attributed to the fact that RIPTA would like to have a supervision presence at its major hubs at Kennedy Plaza, Newport Gateway and downtown Pawtucket. It is also common to have much lower ratios during the midday since scheduling Supervisory shifts requires a spike during the peaks that then overlap into the intervening or following periods. However, the fact that only four Street Supervisors are assigned to the AM peak, the period in which there are the most buses on the street, would suggest that neither of these situations are the case at RIPTA. Given the staff resources, the distribution of Street Supervisor shifts does not match well with typical transit operations.

The staff of street supervisors is responsible for traditional supervision tasks, that is, service monitoring, line management, complaints investigations and accident/incident management. The manner in which these are addressed at RIPTA is described in the following paragraphs.

- **Service Monitoring** - Service monitoring mainly entails observing service to determine and rectify issues with on-time performance and overcrowding. Currently, each Street Supervisor is given weekly assignments to perform "spot checks" at specific locations to track the on-time performance of RIPTA bus service passing that point and to note passenger loads. These are typically randomly selections of assigned locations but are often assigned in response to the need for data regarding a particular location at a particular time. Spot checks are also used to identify any incidences of erratic driving such as speeding or other safety sensitive issues. The Street Supervisor completes a time check and passenger load form that is then provided to the Chief Street Supervisor who stores them in the Service Supervision office. The data is provided upon request to the Planning Department or any other department requesting the information. The data is not regularly tabulated or used for reporting.

  RIPTA also monitors on-time performance and overcrowding through the use of Automatic Passenger Counter (APC) equipment. RIPTA has equipped ten of its buses with APC equipment. The vehicles equipped with the APC's are assigned to vehicle runs in such a way as to satisfy data collection needs for National Transit Database (NTD) reporting requirements as well as internal data collection and analysis needs. Each month, Planning Department staff, assembles the data collected through the APC equipment and runs schedule adherence reports for all routes for which over 250 time point observations had been collected through the APC's that month. In terms of overcrowding, the APC's do collect passenger load data and can be used to monitor overcrowding. Currently, the data is not used to actively identify instances of overcrowding but rather is consulted to confirm complaints or suspicions regarding overcrowding.

The APC data analysis is limited in certain regards. First, as noted above, RIPTA installed the units on ten vehicles. This represents less than five percent of its fleet. Typically, transit systems that are using APC collected data to monitor their service have furnished ten to 25 percent of their fleet with APC units. Second, only one staff person is assigned to administer the program, validate and analyze the data. The level of data that could be tabulated and analyzed is currently at capacity. Therefore, if more APC units were installed, there may not be staff resources to analyze the additional data collected.

- **Line Management -** Street Supervision's key function is line management. Street Supervisor/Dispatchers must monitor service on a daily basis to determine if any disruptions to service have occurred and if corrective action is needed. Disruptions could be a number of things from traffic congestion to equipment failure. These disruptions can be addressed in various ways. If done correctly, Street Supervisors can minimize both the cost and passenger convenience impact of these disruptions. While all Street Supervisor/Dispatchers have the authority to utilize line management tools, in practice typically the supervisor performing the dispatch function makes line management decisions. It is important to note the Street Supervisor/Dispatchers do not receive any specific training in effective line management techniques. Also, RIPTA does not provide Street Supervisors/Dispatchers with any materials such as a line management handbook to promote effectiveness and consistency.

- **Complaint Investigations -** Street Supervisors are also responsible for investigating specific complaints submitted by passengers and other members of the general public to RIPTA's Customer Service Department. Complaints dealing with operators or problems with service are forwarded to the Chief Street Supervisor. The Chief Street Supervisor will then assigns a Street Supervisor to investigate the complaint. According to RIPTA policy, complaints are supposed to be investigated and a resolution entered into the complaint file of the Customer Service database system within five days of receipt of the complaint. A review of records indicates that Street Supervisors investigate approximately 50 complaints per month. This is an average of roughly four per Street Supervisor per month. Depending on the nature of the complaint, each investigation can take as much as a complete workday or more to address.

  A historical complaint at RIPTA regarding the Transportation Department's response to these complaints is that it is too slow and that too many complaints are resolved by simply entering "Operator has no knowledge of incident" or "Operator denies incident" with no further action taken. To determine if this is the case, a sample of 100 complaints to Customer Service was reviewed. Among the sample of complaints, the Transportation Department took an average of 10.9 days to respond to the complaint through an entry in the Customer Service system. This is more than twice the stated policy of five days.

The Transportation Department entered "Operator has no knowledge of incident" or "Operator denies incident" on 12 percent of the complaints. Among these, one-third also included an extra action taken by the investigating Supervisor. This indicates that for the complaints overall, only 8 percent have been responded to with "Operator has no knowledge of incident" or "Operator denies incident" with no further action taken.

Other trends include the fact that for 42 percent of complaints, the Transportation Department indicated that applicable instructions had been given to the driver regarding the specific situation. For 46 percent of the complaints, the Transportation Department indicated that they investigated the complaint and found no problem on the day or days that they investigated or that the operator was not at fault in the situation. Another 8 percent were forwarded to the Safety Department. This includes complaints related to the erratic driving of operators. Among those, the Safety Department indicated that instruction was provided to the applicable operator on 50 percent of the complaints forwarded to the department.

There are two trends that are issues of concern. First, only one complaint resulted in disciplinary action despite the often egregious actions by operators alleged in the complaints. The second issue of concern is that despite the fact that the Transportation Department has identified the applicable operator involved in the incident, only 14 percent of the complaints in the Customer Service database have an operator number listed in the Operator ID field of the complaint file. Even the complaint that resulted in disciplinary action did not include the operator number in the Operator ID field.

The Transportation Department indicated that it is difficult to initiate disciplinary action based solely on Customer Service complaints since they are often imprecise and are almost always a "he said – she said" situation. They also indicated that due to this uncertainty, they are reluctant to enter an operator number into the system. Unfortunately, these two trends run contrary to the purpose of tracking and investigating complaints, which is to actively identify and rectify problems and trends. The procedures currently followed severely limit the effectiveness of the program.

RIPTA needs to take actions to make this program more effective. First, the operator number of the operator involved in all complaints should be entered into the Operator ID field of the complaint file in the Customer Service database. Even in cases where the operator has been clearly exonerated, an ID number should be entered. Entering the applicable operator's number in the Operator ID field can allow for the identification and tracking of trends among particular operators. When trends are identified, many transit agencies make use of undercover rides by either plain clothes street supervisors or outside contractors to investigate the issue further. Given the size of RIPTA, any employee would be known by the operators, and therefore, outside contractors would be advisable. This would allow for the active identification of problems and corroboration of customer complaints, which is another barrier to

taking action based on complaints. For less serious actions, RIPTA could schedule a Street Supervisor or a Safety Department representative to ride along with an operator to provide instruction or rectify any problem. Many agencies have also installed on-board cameras for this reason along with the safety and security benefits of the equipment.

- **Accident/Incident Management** - Street Supervision also responds to accidents and incidents involving in service RIPTA buses. All accidents and incidents are first reported to the Bus Command Center at Kennedy Plaza. In cases of accidents, the Dispatcher will assess the seriousness of the situation and will either dispatch a Street Supervisor to the scene and, in more serious cases, contact the Safety Department to report to the scene. Depending on the situation, as many as three Street Supervisors may be dispatched to an accident scene. Accident scene responsibilities include securing the scene from RIPTA's standpoint and collecting the necessary information to complete a comprehensive report of the occurrence. Under certain circumstances (i.e., injuries requiring transport to hospital, reasonable suspicion, etc.), the RIPTA operator involved in the accident or incident must be transported to a medical facility for an immediate drug and alcohol screening within two hours of the incident. If this is the case, the Human Resources Department is contacted to transport the operator and oversee the testing. If the RIPTA vehicle involved in the accident cannot be returned to service immediately, the Maintenance Department is contacted to address the vehicle and a relief vehicle is dispatched through the Transportation Department.

  Incidents other than accidents may include a vehicle failure. In such cases, the bus operator reports the incident to the Dispatcher in the Command Center. A Street Supervisor may or may not be dispatched to the scene depending on the nature of the problem. If a RIPTA bus experiences a failure of its wheelchair lift and a passenger cannot board a bus, a Street Supervisor is often dispatched to the scene and the passenger is transported in one of the Street Supervisor vans which are equipped with lifts. The dispatcher enters information regarding all incidents and accidents into a database with an assigned code that is then later used for data tracking purposes.

Along with these responsibilities, Street Supervision is also often called upon to intercept operators who have been selected for a random or follow up drug and alcohol screening and transporting them to the appropriate medical facility. This is a time consuming process because the Street Supervisor must retrieve the relief operator, intercept the driver to be screened, transport the driver to the medical office and return to their own assigned site.

The decision making of Street Supervisor/Dispatchers can have major impacts on the service provided to passengers. To ensure quality performance, many transit agencies will periodically review the actions of its Street Supervisors in response to situations they faced. This provides management with an opportunity to instruct the Street Supervisor in how situations can be better addressed. This also promotes the most effective and consistent street supervisory practices. RIPTA's Street Supervsor/Dispatchers are members of a ATU Division 618A.

Since RIPTA has no contractually established policy for employee evaluations of Street Supervisor/Dispatchers, these employees receive no feedback regarding their actions on any regularly occurring interval. Any instruction is provided on an ad-hoc or informal basis.

In terms of recruiting qualified Street Supervisor/Dispatchers, Service Supervision management indicated that the ideal candidates for these positions are senior operators. Transportation Department management indicated that this has not been difficult especially since Street Supervisor/Dispatchers do not lose their seniority as bus operators since they remain in ATU 618. Having street supervisory staff be represented by the same bargaining unit as operators is not ideal but is not uncommon. RIPTA does have supervisory span of control for all hours in which service is being operated. That is, an unrepresented employee is in the top supervisory position at all times when RIPTA buses are in operation. This includes the Depot Superintendents during the daytime hours and the Night Foreman throughout the evening.

If the Street Supervisor/Dispatchers observes an operator making an infraction, the Street Supervisor/Dispatcher provides a report to the Chief Street Supervisor, a non-represented staff position, who officially completes and submits the infraction report.

Conclusions and Recommendations - Based on the review of the Fixed Route Transportation function, the following conclusions and recommendations have been developed.

- RIPTA should institute a program to continuously review its operator training program. This should include an analysis of the safety and customer service performance of new operators throughout the first year. Due to the importance of the new operator training function, RIPTA should continue to make use of outside experts in the training field to evaluate and modify training curriculum and techniques. Also, a comprehensive safety and customer service retraining program should be developed. The retraining program should address both operator specific training to be provided in response to given situations and general retraining that will be provided to all operators.

- RIPTA's Fixed Route Transportation function relies too heavily on 6th and 7th day reports to fill vacant work. This increases RIPTA's costs overall and on a per revenue or vehicle hours basis. This analysis showed that there are a number of factors contributing to this situation. First, the use of sick leave among operators is higher than typical levels. Second, RIPTA has been consistently understaffed in terms of fixed route operators for the past few years. Third, RIPTA's fixed route extra board is smaller than what is typically observed at transit systems the size of RIPTA. To address this issue, it is recommended that RIPTA implement the following:

- RIPTA should establish procedures to track the use of unscheduled overtime. The Finance Department should establish a budget for unscheduled overtime and compare actual to budgeted performance on a monthly basis. The Finance Department should provide the Transportation Department with a report of performance in comparison to this budget on a monthly, if not more frequent, basis.

- RIPTA should begin tracking the use of long term and short term sick leave separately. Trends in long and short terms sick leave should be periodically monitored to identify problems and trends. Attendance records of all operators should be automated and reviewed on a periodic basis to identify any potential abuse of sick leave. Remedial programs should be developed to address any identified problems for individual operators or on a system wide basis. This may not always be punitive. For example, upon reviewing their attendance records, some transit agencies have found that weight problems among bus operators are leading to high rates of diabetes among this group of employees. This degrades their overall health and makes the operator much more likely to be absent for health reasons. Once a cause like this is identified, the agency can design much more effective programs for addressing the problem and improving attendance.

- Using the attendance data, RIPTA should begin preparing weekly or monthly operator availability reports. Absences should be tracked by various categories at least including long term sick, short term sick, IOD (Workers Compensation), Vacation, Personal Time, Excused – Contractual and Excused – Governmental Mandate. This data should be incorporated into the process of determining budgeted headcount of operators as well as the number of vehicle hours to be scheduled given that headcount.

- RIPTA should expand its fixed route operator extra board to a ratio of 10 to 1 rather than the current 13 to 1. This will be in line with industry practices.

- As described in the Human Resources review, RIPTA prefers to hire vehicle operators as Flex Division operators first and move them to fixed route after a particular period. RIPTA has observed that operators who have worked in the Flex Division first have better safety and customer service skills than operators who have been hired directly into a fixed route position. Due to these findings, this is an advisable policy to continue. However, RIPTA has also followed a policy of ensuring full staffing in the Flex Division before transferring operators to fixed route operations. This policy should be revisited. Understaffing in the Flex Division is much less costly than the same situation in fixed route operations. Flex Division operators earn a lower wage than fixed route operators. Therefore, covering vacant Flex Division runs at overtime rates is less expensive then doing so for fixed route runs.

- The RIPTA Fixed Route Transportation Department has made great strides in the past few years in expanding its data collection. The department has begun a detailed tracking of missed service by day and reason. This is a commendable policy and should be continued. It is recommended that the number of missed trips be compared to the total number of scheduled trips overall on a monthly basis to ensure that RIPTA continues to exceed the guideline of missing only 0.50 percent of scheduled trips.

- Several conclusions and recommendations regarding RIPTA's street supervision and control function have been developed. These include the following:

  - An analysis of street supervision staffing levels showed that RIPTA has more Street Supervisors on duty throughout most of the day than industry guidelines suggest. It should be noted, however, that the guideline used in this analysis addresses a minimum level of supervision. Also, given the size of RIPTA, what was deemed an "overstaffing" constituted two Street Supervisors. It is not unreasonable for RIPTA to maintain this staffing level if they deem it to be beneficial to their service overall. Also, RIPTA may choose to maintain this staffing level to provide a consistent level of supervision at its three hubs in Providence, Pawtucket and Newport. The one issue with Street Supervision staffing, however, is the current allocation of supervisor shifts throughout the service day. RIPTA currently has fewer street supervisors on duty during the AM peak period than during the midday period. These shifts should be re-designed to provide the highest level of street supervision coverage during the time period in which RIPTA has the most vehicles in operation.

  - RIPTA should establish a specific training curriculum for new Street Supervisor/Dispatchers as well as retraining for existing employees. This should include training on line management techniques. RIPTA should also develop a line management handbook for Street Supervisor/ Dispatchers to ensure consistent and effective practices.

  - The staff of Street Supervisors currently collects on-time performance and passenger load data. However, this data is not regularly tabulated or used in any analysis. RIPTA has begun to use data collected through APC equipment for this purpose. Therefore, Street Supervisors should only be used to collect on-time and passenger load data on a by request basis to supplement or verify the APC collected data.

  - RIPTA should equip at least 10 percent of its fleet with APC equipment. This would represent approximately 22 vehicles, an increase of 12 over the current level.

- Time saved from no longer performing on-time and passenger load checks on a regular basis should be directed towards decreasing the average response time to customer service complaints. Also, the Transportation Department should always enter an operator number in the Operator ID field of the complaint file in the customer service database. Whenever possible, route and vehicle number should also always be entered. Each month, the Chief Street Supervisor, the AGM for Transportation or any other designated administration employee should review the Customer Service complaint data to identify any service related trends (i.e., on particular routes, regarding particular operators, etc.). RIPTA should also develop a program of tools to be used to investigate these trends. This could include the use of undercover rides by an outside contractor (or a non-represented employee not known by operators) or ride-alongs with Street Supervisors or Safety Department staff. This would allow the Chief Street Supervisor to address identified trends with undercover rides, ride-alongs, spot checks or a combination of these tools when necessary. Tracking the trend data will allow RIPTA to more effectively identify problems and using more tools will allow them to take further action when necessary.

- The actions of Street Supervisor/Dispatchers can have a significant impact on the reliability and convenience of the service from the passenger's standpoint. Due to this, the actions taken by Street Supervisors in response to situations assigned to or encountered by that supervisor should be reviewed on a periodic basis. Corrective instruction or retraining should then be provided when necessary. RIPTA's Street Supervisor/ Dispatchers are represented by ATU 618A, and since there is no contractual mechanism for evaluating supervisors, it is not currently done. However, the review process proposed here does need to be linked to salary increases or any type of benefit. The review could be simply instructive and designed to promote effective and consistent street supervision. A more formal evaluation process for Street Supervisor/Dispatchers could be pursued by RIPTA in future contract negotiations.

RIde PARATRANSIT SERVICE

Overview and Organizational Structure

Rhode Island's specialized service for individuals with disabilities and seniors is provided based on the eligibility requirements of several state agencies' programs. Certification for each program is required, and is performed by the agency that funds the particular program. All paratransit services, except those provided under the federal ADA requirements, are provided door-to-door for eligible passengers throughout the state. Most non-ADA services are available on weekdays only, with trip purposes generally limited to medical, meal site, and sheltered workshops. There is no fare charged to these agency clients for non-ADA trips. In accordance with the federal regulations, ADA service charges a fare but does not limit trip purpose. Further, it operates during the same hours as the bus system, but is available only within ¾ mile of the fixed-route service.

The RIde program is provided by a number of service providers under a brokerage system whereby a single entity is responsible for overall management and coordination of the State's consolidated paratransit services. Until July 1, 2002 RIPTA was the program administrator, but a third-party broker was retained under contract. The brokerage function was brought in-house in June 2002 during a restructuring effort that was implemented to reduce costs and improve control for better service quality as recommended by the State Auditor General. At this time, the State was responsible for preparing and issuing the Request for Proposals (RFP) for the consolidated paratransit service. As part of the RFP process in 2003, RIPTA proposed on and won the new service provider contracts for four of the six newly designated service areas in the state, as follows:

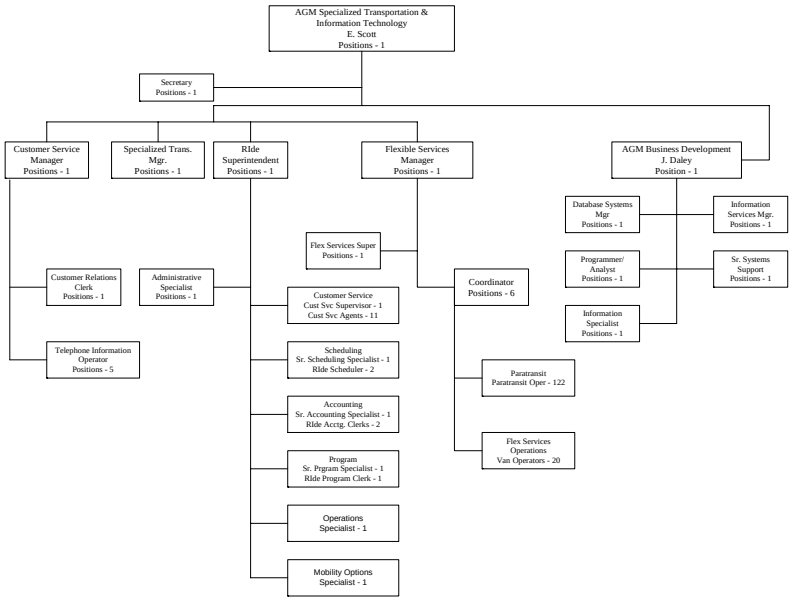
- Northeast Providence
- Greater Providence
- Central Rhode Island
- South County

Service provision for the remaining two areas is contracted to other entities: Northwest Transportation Services (Blackstone Valley/Woonsocket region) and Newport County ARC/Maher Center (Newport County region).

Operating expenses for the RIde program in FY2005 totaled $12.43 million including administration cost, according to RIPTA's reporting to the National Transit Database (NTD). Actual operating expenses over the last five years increased on average by nearly 15 percent annually, from $7.16 million in FY2001 to $12.4 million in FY 2005. The largest annual increase of 33 percent occurred between FY2002 and FY2003 due to a 29 percent increase in ADA ridership and the fact that it was the first year that RIPTA was reporting directly as the broker. FY2003 was also the first year that taxi services and payments were reported. The operating expenses in the remaining years up through FY2005 increased by an average of only about 9%.

Organization - RIde service is administered through RIPTA's Division of Specialized Transportation and Information Technology. As shown in Figure 7, both the brokering function and the operating function are carried out through this division, along with the ADA eligibility function. The total staff size supporting the RIde program (excluding the outside service providers and Flex Service staff) is 148, including the three basic functions and oversight by the Assistant General Manager of the division.

Figure 7
Division of Specialized Transportation & Information Technology



The bulk of the employees are Paratransit Operators (122). Although the Flex Services staff is noted in the organization chart, they are not part of the RIde program, but are a separate program that uses wheelchair-accessible small buses for reservation-based neighborhood service wholly within several suburban and rural communities.

Program Description

The RIde program is Rhode Island's statewide, coordinated paratransit service. It provides specialized door-to-door transportation for transit dependent seniors, individuals with disabilities, and low-income citizens. The program services are funded primarily by four state agencies:

- RIPTA (for ADA service)
- RI Department of Elderly Affairs (DEA)
- RI Department of Human Services (DHS)
- RI Department of Mental Health, Retardation, and Hospitals (MHRH)

RIPTA and DEA each fund approximately 46 and 34 percent of the program's operating costs respectively, with the remaining 20 percent split between the other agencies. MHRH funding is obtained through the various ARC's. RIPTA funds 100 percent of the administrative costs of the program. These costs are not distributed back to the funding agencies.

The majority of the state's human services transportation is coordinated through RIde. Some agencies, such as senior centers, arrange rides for their clients. RIde also accepts direct calls from clients to schedule trips. All trips are scheduled through the brokerage function, which schedules trips on the vehicles as shared rides. Taxis are also utilized in the event a trip cannot be completed on a van. The taxi trips are also scheduled through the brokerage.

Each funding agency sets its own service parameters, including funding, eligibility criteria, days and hours of service, number of trips, trip purposes, and approved locations. Details by funding agency and program are shown in Table 9.

Table 9 - Program Details by Funding Agency

Funding Agency	Eligibility Criteria	Trip Purpose	Conditions	Fare
RIPTA	ADA	Any	Available only within ¾-mile of a fixed route, and during the same hours the fixed route bus operates in that corridor	$3.00 one way
DEA	Age 60+ or under 60 on Medical Assistance	Medical, Mealsite, Adult Daycare, Dialysis	Weekdays, during limited hours depending on community	None
DHS	RIteCare enrollee with no access to other transportation	Medical	Health Plan approval given one of these conditions: origin/destination is 1/2-mile or more from nearest bus stop; unable to use bus; same day urgent care needed; chronic condition requiring frequent appointments	None
DHS	Vocational Rehabilitation	Rehabilitation, training, or job-related program	Part of approved plan with VR	None
MHRH	Client of an ARC	Sheltered workshop or approved work location		None

RIPTA manages the eligibility process for the ADA service. The other agencies make their own eligibility determinations and provide lists of the approved passengers to RIde. Prior to the contract rebids in 2003, there were nine RIde service providers, including RIPTA. Subsequently, as a result of the State of Rhode Island's Request for Proposals (RFP) process, the total was reduced to three, including RIPTA. The bulk of service is currently provided by RIPTA (87 runs in four regions each weekday). Maher and Northwest operate 11 and 10 runs per day, respectively.

A run is defined in the operating contracts as ten vehicle service hours per day of continuous or split-shift service. RIPTA's paratransit brokering duties cover reservations, scheduling, billing, training, and centralized maintenance for all carriers. No trip scheduling is done through other agencies.

RIde staff members regularly oversee the driver training programs, safety and driver records, as well as Drug and Alcohol reporting at the contracted service providers. In addition, ongoing monitoring is performed of the actual service operation, with primary emphasis on safety and customer service. The monitoring effort also includes other quality of service measures such as vehicle cleanliness and schedule adherence. A RIde Performance Evaluation report is prepared and reviewed daily to identify any late runs and service problems with all contractor runs.

Ridership and Operating Statistics - Table 10 shows the trends in the last five years in RIde passenger characteristics as well as the service levels operated.

Table 10
Trends in Operating Statistics – The RIde

	FY2001	FY2002	FY2003	FY2004	FY2005
Size of client population	10,030	9,683	9,225	9,661	10,337
Miles operated	3,159,421	3,212,070	3,746,127	4,040,822	4,027,039
Hours operated	214,319	220,278	253,085	304,115	310,146
Total unlinked passenger trips	633,798	663,835	718,215	730,021	689,991
Total active unique individuals - took trip	9,463	9,072	8,681	9,040	9,498
Annual trips/person	67	73	83	81	73
ADA trips	116,899	131,358	167,372	198,927	196,583
ADA-eligible individuals – took trip	1,208	1,572	1,963	2,359	2,482
Annual ADA trips/person	97	84	85	84	79
ADA percent of trips taken	18%	20%	23%	27%	28%

As can be seen, the total RIde client population has remained relatively stable at about 10,000, and there was only moderate variation in overall ridership results from year to year. At the same time, annual miles and hours both increased noticeably, and ADA trips have become a larger portion of total trips. For example, ADA in FY 2001 represented about 18% of the total trips made. ADA trips have increased in FY 2005 to about 28% of the trip made, a significant increase. At the same time, the number of ADA trips taken per eligible person decreased from 97 in FY 2001 to 79 in FY 2005. This change has an impact on program costs since ADA trips tend to be more costly compared with other type trips.

About 75 percent of all trips taken in FY2005, and FY2006 through February, were standing orders. Data from earlier years was not available.

Payments for Service - Under the contract stipulations, RIPTA bills each funding agency monthly for the services provided. When payments are received from the funding agencies, RIPTA pays the service providers. The payment schedule for the carriers is based on hourly rates that differ among the six service regions, reflecting variations in the operating conditions. Currently, these rates are as follows:

- Northeast Providence (RIPTA) - $29.47
- Greater Providence (RIPTA) - $26.62
- Central Rhode Island (RIPTA) - $27.70
- South County (RIPTA) - $31.86
- Blackstone Valley (Northwest) - $34.92
- Newport County (Maher) - $31.90

The use of fixed hourly rates was specified in the State issued RFP. The hourly rates are based on a straight average over the five-year life of the operating contracts (set to expire in June 2008), with some adjustments made for significant shifts in key areas such as fuel and insurance costs. This rate schedule does not take advantage of possible overall savings from a graduated system whereby lower rates in the earlier years could be used to offset higher costs in the later years. RIPTA takes accounting credit for contract revenue when service is operated at the average rate per hour.

The amount billed to the funding agencies includes an additional fixed rate per hour of service that reflects maintenance, training and vehicle replacement costs incurred by the RIde program. These are functions that RIPTA now provides for the other two service providers. Currently, that charge is $5.76 per hour. The rate is set at the beginning of each fiscal year with an estimate of costs for the coming year. If necessary, June rates are adjusted to balance revenue and actual expenses for the fiscal year.

Passenger fares are collected on RIde vehicles only for the ADA trips (currently $3.00 per trip). Payments may be made with cash or RIPTIK prepaid fare media. Fare revenues collected by the carriers are deposited into their own bank accounts and deducted from the monthly reimbursement. When taxis are used to provide ADA service, reimbursements to the taxi companies are based on the meter rate per trip less the $3.00 passenger fare.

Fleet and Maintenance - All RIde passenger vehicles are owned and maintained by RIPTA. As of November 2005, the fleet consisted of 135 Turtletop model vans dating from 1999 through 2005. Most of the vehicles had 10, 16 or 17 seats and two wheelchair tie-downs. The assignment by carrier was as follows:

- RIPTA - 87 active plus 17 spare/contingency
- Maher - 11 active plus 2 spare
- Northwest - 10 active plus 1 spare
- Centralized Maintenance Reserve Fleet - 7

The fleet size remained constant from 2003 through 2005, down from 140 in the previous two years. The peak requirement rose from 106 vehicles in 2001 to 108 in 2005. The RIde vehicles are not used on any other RIPTA services, but drivers are interchangeable between the RIde and Flex services.

In the State Auditor General's performance audit of the RIde program, it recommended the implementation of a Centralized Paratransit Maintenance Program. This audit found that vehicles assigned to the service providers were not being properly maintained. To correct the problem and to follow the recommendation of the audit, the Centralized Paratransit Maintenance Program was implemented by RIPTA and has been in effect since June 2003. It was implemented at the same time that the implementation of the new contracts for services based on the new RFP.

This centralized operation and maintenance of RIde vehicles from one location, Elmwood garage, has raised concerns about the cost effectiveness of this approach. RIPTA has evaluated the cost effectiveness of this centralized approach compared to opening satellite facilities to reduce costs related to non revenue portion of the service, or dead heading of vehicles for pull-out and pull-in purposes. RIPTA's Planning Department recently completed a study titled "Feasibility of Off-Site Facilities for RIPTA's Service as a Paratransit RIde Carrier", dated May 26, 2006. In this study one of the options evaluated by RIPTA included cost impact of opening a facility in Washington County. This service area is the furthest away from the Elmwood garage. RIPTA concluded that it would cost $177,000 more annually to operate the service from a satellite facility in Washington County compared to operating the same level of service from Elmwood garage that includes the deadhead travel costs.

Departmental Activities

As noted above, the RIde-related activities at RIPTA can be divided functionally into three distinct areas: ADA Eligibility, Brokering, and Service Provision. Each area and its key personnel are discussed below:

ADA Eligibility - Responsibility for carrying out RIPTA's ADA eligibility process lies with the Specialized Transportation Manager. This individual follows policies and procedures established directly in response to applicable sections of Federal regulations (in 49 CFR Part 37). They were approved by RIPTA's Board of Directors in 2003, with input from the Accessible Transportation Advisory Committee, a public hearing, and other procedures as stipulated in the RI Administrative Procedures Act.

The current application process reportedly works adequately, though it has not been revised since the program's inception. Implementation of a new software system is anticipated between November 2006 and summer 2007. Clients generally are certified as eligible for five years to use the ADA paratransit service, after which recertification is required. There are three basic classes of certification:

Full eligibility - eligible to use ADA service for all trips

Conditional eligibility - eligible for certain trips based on factors such as distance to the nearest bus stop, schedule of accessible bus service, or inclement weather

Temporary eligibility - eligible only for a limited period of time, based on a specific temporary disability

There is currently no functional eligibility review. The application denial rate is between three and four percent.

Brokering - The General Superintendent (RIde Superintendent) is responsible for administering and supervising the daily operations of the RIde Division. This includes assignment of paratransit and Flex services as required to meet scheduled service, and oversight of the service providers to assure quality compliance with their contracts. Reporting to the Superintendent is an Administrative Specialist, who is the de facto office manager. This individual assists the Superintendent and focuses primarily on oversight of the Customer Service, Scheduling and Accounting departments. These and the other administrative branches supporting the brokering function are described below:

Customer Service - The RIde Customer Service Supervisor and the RIde staff of Customer Service Agents handle intake calls for scheduling RIde service trips, provide information, and resolve service problems. The call intake duties comprise the bulk of the activities, since they include ADA and non-ADA trips, and involve substantial interaction with other agencies (e.g., dealing with the DEA and even specific doctors to schedule essential emergency rides). Logging and tracking complaints through their resolution is another key activity.

Scheduling - The Senior Scheduling Specialist and the staff of Schedulers is responsible for the daily scheduling of passenger trips for the paratransit services. The mission is to develop cost-effective group runs and individual trips, for all runs assigned to all carriers. Most of the scheduling activities are done manually. Three basic types of schedules are prepared, based on the six designated service areas across the state:

- All origins and destinations in one service area
- Origins in one service area and destinations in another service area
- Origins in one service area, destinations in another service area, further pick-ups in the other service area, and destinations in a third area

It should be noted that Flex service scheduling is handled primarily by the Mobility Options Specialist. However, the backup RIde Scheduler fills in when the Mobility Options Specialist is absent.

Accounting - The Senior Accounting Specialist and the staff of Accounting Clerks handle the data entry and billing duties, mostly associated with reimbursements for trips provided. They handle provider and vendor inquiries, and assemble and prepare information needed for invoice reports. Data from drivers' manifests is entered into the system, as are any adjustments as directed. Monthly accounts payable and receivable reports are also prepared.

RIte Care Transportation Program - The Senior Program Specialist and the Program Clerk are responsible for the operation of DHS' RIte-Care Transportation Program. They handle all aspects including phone intake, scheduling, and billing for service provided. Due to the nature of the DHS medical transportation, most of the trips utilize taxi services, though an attempt is made to use vans wherever feasible. Transportation is authorized by participating HMO's for medical appointments, mostly for children, and the HMO's coordinate directly with the Program department to facilitate the actual scheduling.

Operations - The Operations Specialist is responsible for monitoring the daily service provision of the entire RIde operation. This includes on-street supervision, trouble-shooting when problems arise, checking on-time performance, and general service monitoring. The position also serves as a back-up scheduler, oversees operations of all contractors, and communicates safety instruction and safety program requirements. Other duties include driver training, passenger assistance when warranted, and spot-checks of the vehicles.

Mobility Options - The Mobility Options Specialist is involved with RIPTA trip planning, reservations, scheduling and connections. The scope of the position covers all service modes, but concentrates on the Flex service.

Service Provision - As noted previously, RIPTA is the contracted RIde service provider for four of the six designated service areas across the state. The operating contracts for the other two carriers contain identical stipulations to those in place for RIPTA, including assessment of liquidated damages for substandard performance. Fuel charges are the only difference and related to the carrier's bid, not to a contract difference.

To meet RIPTA's mandate, the Flexible Services Manager, assisted by the Flex Service Supervisor, oversees the daily provision of service for RIde as well as the Flex service. This includes duties such as assignment of vehicles, deployment of personnel, application of policies and resolution of grievances, calculation of payroll for all Division employees, assuring that work assignments are in compliance with the labor agreement, coordinating the Drug and Alcohol testing program, and record-keeping to generate reports relative to operations.

Reporting to the Flex Service Supervisor are the Coordinators and Vehicle Operators. The paratransit dispatch function is performed by several Coordinators. They are responsible for assigning work to drivers, dispatching vehicles, and generally ensuring that service is running smoothly and efficiently. The Coordinators communicate with trip reservationists and schedulers on the brokerage side at least daily. A Nextel radio system is used to communicate with drivers. This system has statewide coverage. In addition, drivers are required to be knowledgeable of their service areas, and receive training in this and many other facets of their jobs during a five-week orientation training required for all new hires.

Service runs are selected on a semi-annual basis, which is considered frequent enough to enable flexibility in the workplace, but long enough to establish a personal affiliation with their assignment.

As noted previously, the vehicles are not interchangeable between paratransit and Flex service, but the pool of vehicle operators is qualified for both services. All of these operators are on the same pay scale, which is about 40 percent below the fixed-route operator rate.

Performance Results

RIPTA staff provided statistical information covering the period of FY2001 through FY2005 for this review. Based on the fact that the service areas where re-aligned and new contract terms were established beginning in FY 2003, only the information for FY2003, FY 2004 and FY 2005 were used. From this data, trends could be reviewed in a number of performance areas. As shown in Table 11, the annual trends were reviewed for several key performance indicators.

Table 11
RIde Program Performance Indicators

Indicators	FY2003	FY2004	FY2005	Percent Change FY03 to FY05
1. Operating Cost per Passenger	$14.31	$15.39	$18.02	25.9
2. Operating Cost per Vehicle Mile	$2.74	$2.78	$3.09	12.8
3. Operating Cost per Vehicle Hour	$40.60	$36.94	$40.08	(1.3)
4. Passengers per Vehicle Mile	0.19	0.18	0.17	(10.5)
5. Passengers per Vehicle Hour	2.84	2.40	2.22	(21.8)
6. Complaints per 10,000 Passengers	6.2	9.3	2.3 *(b)*	(62.9)
7. Service Denials	0.0	0.0	0.0	0.0
8. Percentage of Passenger Cancellations	19.6%	19.6%	22.3%	95.6
9. Percentage of Passenger No-Shows	3.1%	3.3%	3.8%	22.6
10. Accidents per 100,000 Miles	2.3	3.9	*(a)*	N/a
11. On-Time Performance	89.1%	90.4%	92.5%	3.8
12. Percentage of Received Calls Completed	*(a)*	93.2% *(b)*	90.6%	N/a

(a) Not available
(b) January-December 2005, based on information presented in Table 21
N/a: Not applicable
Sources: Lines 1-5, 7-9, 11-12 – Worksheets provided by RIde staff
Lines 6, 10 – General Manager's Reports/Worksheet provided by RIde staff

Highlights are summarized below:

- The operating cost per passenger and per mile both increased from each of the prior years. Over the three years, the cost per passenger rose by 25.9 percent while the cost per mile rose by 12.8 percent. As shown in Table 10, the difference in the cost per passenger and per mile is due to the fact that passenger trips declined during this three year period from 718,215 to 689,991 while miles operated increased from about 3.75 million to 4.03 million or about 7.5 percent.

- A very favorable result is that cost per hour declined by 1.3 percent. The difference between the change in cost per mile and per hour is due to the fact that total miles increased by about 7.5 percent while total hours increased from 253,085 to 310,146 or a 22.5 percent increase. It should be noted that the operating cost per vehicle hour in FY 2005 was $40.08. This number includes the carrier bid rates, RIde administrative costs, centralized maintenance and training cots plus the cost for local matching dollars for capital expenditures (vehicles).

- Passenger productivity declined both on a per mile and per hour basis due to the fact that passenger trips declined while the amount of service that was provided increased. Part of the reason for this performance is a result of an increase in ADA trips that are typically more costly to operate.

- The RIde program uses a computerized complaint tracking system. The complaint rate decreased from about six complaints per 10,000 passengers in FY 2003 to about 2.3 complaints per 10,000 passengers by FY 2005. This is a substantial decline complaint rate and very favorable performance.

  However, from discussions with stakeholders, it was found that there are concerns about certain facets of the current RIde program. Issues have been raised by passengers, funding agencies and other associated parties. Key examples include:

  - long advance notice is often needed to reserve a trip, sometimes as much as several weeks for non-ADA non-emergency trips. This is a result of service delivery parameters established by DEA for medical trips due to their budget constraints;

  - reported instances of poorly trained drivers and inappropriate behavior; and

  - lack of responsiveness to outside agency needs and concerns.

  It is believed that much of these findings could be addressed and mitigated with more communications by RIPTA staff with these funding agencies.

- There were no service denials for eligible riders during the period, for ADA or non-ADA service. The ADA service results are consistent with Federal ADA regulations. However, the RIde program should be applauded for the lack of trip denial for the non-ADA trips. Most systems are faced with service and funding constraints that result in denial of some non-ADA trips.

- Passenger cancellations and no-show data have increased substantially in the three-year period. Between FY2003 and FY2005, cancellations went up from about 19.6 percent to 22.3 percent of scheduled trips and no-shows went from 3.1 percent to 3.8 percent. While the increase in the amount of no-shows was high, the actual performance in FY 2005 is not bad. In fact, having a no-show rate at or below 5 percent is generally acceptable. The 22.3 percent cancellation rate is high. Many systems struggle with high cancellation rates. However, these systems are now defining cancellations as "early cancellations" and "late cancellations". An early cancellation is made early enough so that it can be addressed in the schedule of service for that day without a cost impact. A late cancellation is not done early enough and the trip for the cancelled rider is already scheduled. A cost impact occurs. The RIde program should begin to track cancellations in this manner.

- The accident rate increased from 2.3 accidents per 100,000 miles in FY 2003 to 3.9 accidents per 100,000 miles in FY 2004. No accident results were provided for FY2005. RIde should establish a performance target for this measure and track it closely.

- Based on a window of 15 minutes before or after the scheduled time, results showed an improvement from 89.1 percent on-time in FY2003 to 92.5 percent on-time in FY2005. Any performance above 90 percent is favorable.

- Call Center performance was measured by tracking the portion of calls received that were completed. Results were available for the last five months of FY2004, and all of FY2005 due to the installation of a new phone system. There was a decrease in completed calls from FY2004 (93.2 percent) to FY2005 (90.6 percent).

The RIde program's performance had mixed results during the last three years. Cost efficiency was mixed with cost per mile showing an increasing trend while cost per hour showing a declining trend. Cost effectiveness and passenger productivity both showed a declining trend. This was primarily due to a four percent decline in riders. Passenger cancellation and no-show rates as well as accident rate increased. The completed call rate dropped somewhat in FY2005, though it remained above 90 percent. On the positive side, the complaint rate dropped significantly, there were no service denials and on-time performance improved in the last year to 92.5 percent.

Conclusions and Recommendations

Until mid-2002, RIPTA was the RIde program administrator, but a third-party broker was retained. The brokerage function was then brought in-house in response to State Auditor General's recommendation. Soon thereafter RIPTA proposed on and won the new service provider contracts for four of the six newly designated service areas in the state.

RIde service is administered through RIPTA's Division of Specialized Transportation and Information Technology. Both the brokering function and the operating function are carried out through this division, along with the ADA eligibility function. RIde services are funded primarily by four state agencies. Each funding agency sets its own service parameters. Passenger fares are collected on RIde vehicles only for the ADA trips.

RIde staff members regularly oversee the driver training programs, safety and driver records, as well as Drug and Alcohol reporting at the contracted service providers. In addition, ongoing monitoring is performed of the actual service operation, and a RIde Performance Evaluation report is prepared and reviewed daily to identify any late runs and service problems with contractor runs.

The total RIde client population has remained relatively stable at about 10,000. At the same time, annual miles and hours both increased noticeably since FY2001, and ADA trips have become a much larger portion of total trips. In fact, the number of ADA trips taken per person has also increased.

The payment schedule for the carriers is based on hourly rates that differ among the six service regions. The rates are based on a straight average over the five year life of the operating contracts.

All RIde passenger vehicles are owned and maintained by RIPTA. The Centralized Paratransit Maintenance Program has been in effect since June 2003. The funding agencies include a fee in their hourly rate for maintenance of all RIde vehicles at RIPTA facilities.

The current ADA application process appears to function adequately, though it has not been changed since the program's inception. Implementation of a new software system is anticipated between November 2006 and summer 2007. There is currently no functional eligibility review.

The operating contracts for the other two carriers contain identical stipulations to those in place for RIPTA, including assessment of liquidated damages for substandard performance. Drivers are required to be knowledgeable of their service areas. All new drivers receive five-week training. It should be noted that this driver training program has be recently revamped and expanded.

The RIde program's performance had mixed results during the last three years. Cost efficiency was mixed with cost per mile showing an increasing trend while cost per hour showing a declining trend. Cost effectiveness and passenger productivity both showed a declining trend. This was primarily due to a four percent decline in riders. Passenger cancellation and no-show rates as well as accident rate increased. The completed call rate dropped somewhat in FY2005, though it remained above 90 percent. On the positive side, the complaint rate dropped significantly, there were no service denials and on-time performance improved in the last year to 92.5 percent.

Generally higher operating costs have ensued from provisions in the current operating contracts that changed the calculation of hours for billing purposes to include deadhead and driver breaks.

There are concerns with certain facets of the current RIde program raised by passengers, funding agencies and stakeholders. Key examples include a long advance notice often needed to reserve a trip due to parameters established by funding agencies, allegations of inadequately trained drivers and inappropriate behavior, and lack of responsiveness to outside agency needs and concerns.

The following recommendations are offered for RIde to improve the efficiency and quality of the paratransit service:

- The State of Rhode Island should consider changing the hourly billing rate schedule for the next round of operator contracts to take advantage of probable cost savings from a graduated system whereby lower rates in the earlier years could be used to offset the higher costs in the later years.

- Administration costs for the RIde program should be pro-rated to various funding agencies.

- RIPTA should streamline its brokering function to ensure timely responsiveness to trip reservation requests as well as the needs and concerns of outside agencies.

- RIPTA should work with the funding agencies to tighten their policies with regard to passenger cancellations and no-shows, to stem significantly worsening trends in these areas.

- RIPTA should review the progress made by its improved driver training program to reduce and/or eliminate instances of inadequate familiarity with service and inappropriate behavior.

- The RIde program should begin to track trip cancellations in two ways – early cancellations that have no impact on service and therefore costs and late cancellations that do impact service.

- RIPTA should improve communications with the user groups, funding agencies and stakeholders to ensure that it receives their input and responds to their concerns in a timely manner.

MAINTENANCE

Overview

The RIPTA Maintenance Operations staff performs almost all of the transit system's routine vehicle maintenance activities at two separate operating facilities (i.e., the Elmwood Depot and the Newport Depot). These activities include the daily servicing of the revenue vehicle fleet, preventive maintenance (PM) inspections, diagnostic (running) repairs and any other activities associated with the day-to-day readiness of both the revenue fleet as well as the non-revenue fleet.

Staff at the Elmwood Depot are responsible for major body work and painting, the removal of engines, the removal and overhaul of transmissions, all wheel work and component rebuilds such as transmissions and engine accessories (although the staff at the Newport Depot can complete brake work on the vehicles based there). The Elmwood Depot is also responsible for RIPTA's mid-life vehicle overhaul program, known as the "Heavy Scheduled Operation" (HSO). The unit repair shop at the Elmwood Depot completes this major overhaul, which also includes work on a vehicle's undercarriage, on its heating, ventilation and air conditioning (HVAC) system and on its compliance with the Americans with Disabilities Act (ADA). ADA compliance may include items such as repairing wheelchair restraints and making certain all audible signals are functioning.

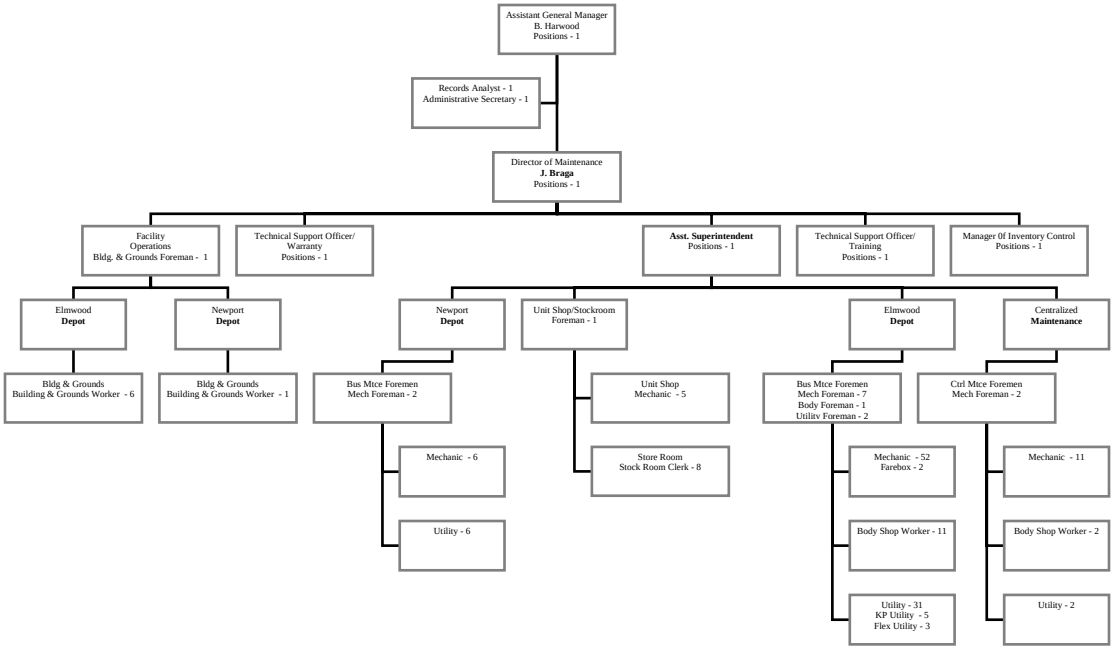
RIPTA also makes use of outside vendors for certain repair or rebuilding functions. Engines are rebuilt by an outside vendor, and the electronic components of fareboxes are also repaired by an outside vendor (although routine farebox repairs are handled in-house by RIPTA). The system's radios are maintained by Motorola, which visits both depots once a week. Although RIPTA changes tires itself, the re-grooving of tires is contracted out. At RIPTA's facilities, the HVAC system repairs - as well as the electrical repairs, plumbing repairs and snow removal after a major snowstorm - are also all contracted out to third party vendors; however, the regular day-to-day cleaning and landscaping at each facility (as well as minor snow removal) are all handled in-house by RIPTA. Although RIPTA maintains its passenger waiting shelters at the Kennedy Plaza intermodal transfer center, the shelters throughout the rest of the system are maintained by an advertising vendor (i.e., Lamar). Finally, any warranty repairs for non-revenue vehicles are completed by outside vendors.

The remainder of this section provides a detailed description of the management structure, policies, procedures and assets RIPTA utilizes to perform the maintenance function.

Staff Organization

Maintenance Operations is its own department at RIPTA. The department is headed by the Assistant General Manager of Maintenance, who reports directly to the General Manager of RIPTA. The Assistant General Manager is supported by one Records Analyst and one Administrative Secretary. The organization of this department is shown in Figure 8.

Figure 8
Maintenance Operations



Reporting to the Assistant General Manager is the Director of Maintenance. The Director of Maintenance has five people reporting to him: the Buildings and Grounds Foreman, the Technical Support Officer for Warranties, the Technical Support Officer for Training, the Manager of Inventory Control and the Assistant Superintendent of Maintenance. Neither the two Technical Support Officers nor the Manager of Inventory Control have any additional people reporting to them. The Buildings and Grounds Foreman has six people at the Elmwood Depot and one person at the Newport Depot reporting to him.

The Assistant Superintendent of Maintenance has 15 people reporting to him. Two of these "direct reports" are the two Mechanical Foremen at the Newport Depot. These two foremen are responsible for the six Mechanics and six Utility personnel at the Newport Depot.

The remaining 13 people who report to the Assistant Superintendent of Maintenance are all based at the Elmwood Depot. The first is the Unit Shop/Stockroom Foreman, who is responsible for five Unit Shop Mechanics and eight Store Room Clerks. The seven Mechanical Foremen, two Utility Foremen and the Body Foreman also report to the Assistant Superintendent of Maintenance and are responsible for the 52 Mechanics, two Farebox Mechanics, 11 Body Shop Workers, 31 Utility personnel, five Kennedy Plaza Utility personnel and three "Flexible" Utility personnel based at the Elmwood Depot. Finally, the two Centralized Maintenance Mechanical Foremen also report to the Assistant Superintendent of Maintenance and are responsible for 11 Mechanics, two Body Shop Workers and two Utility personnel. The Centralized Maintenance staff is responsible for the maintenance of the demand responsive fleet (i.e., the "RIde" fleet), which is primarily accomplished at the Elmwood Depot. However, one of the 11 Centralized Maintenance Mechanics is based at the Newport Depot in order to work on the RIde vehicles based at that location. The Newport Depot's other personnel will also work on RIde vehicles when necessary; however, they are not dedicated to servicing the RIde fleet.

Staff Organization by Shift - Lastly, the assignment of staff at each facility by shift was also reviewed. At the Newport Depot, there are two shifts: an AM shift and a PM shift. The two Mechanical Foremen at the Newport Depot are each responsible for a shift; the six Mechanics and six Utility personnel at the Newport Depot are split evenly between the two shifts. Finally, the Buildings and Grounds person at the Newport Depot works during the day (i.e., AM) shift, as does the single Centralized Maintenance (i.e., RIde) Mechanic assigned there. It should also be noted that the Maintenance Operations at the Newport Depot are closed on Sundays during the winter months. Seven-day-a-week operation of the maintenance facilities at the Newport Depot resumes during the summer months.

At the Elmwood Depot, the assignment of staff by shift is more complex because this significantly larger facility is also open at all times. Due to the 24 hour-a-day, seven-day-a-week operation of the Elmwood Depot, the staff at that location is divided into three shifts. The first shift is from 7:30AM to 4:00PM, the second shift is from 4:00PM to 12:00AM, and the third shift is from 12:00AM to 8:00AM. The exception is for the Centralized Maintenance staff, which is responsible for maintaining the RIde demand responsive fleet. The Centralized Maintenance staff works two shifts, with the first being from 7:30AM to 4:00PM and second being from 4:00PM to 12:00AM. The staff assignment roster - by shift - for the Elmwood Depot is presented in Table 12.

As was previously stated, the Centralized Maintenance staff - which maintains the RIde demand responsive fleet - works on a two-shift system, thus eliminating any third shift data for this group of employees. As can also be seen in Table 12, the two Utility Foremen in the bus maintenance group work a "staggered" but overlapping set of shifts so that they are both available during the peak period of the daily servicing of the revenue fleet. One Utility Foreman works from 4:00PM to 12:00AM while the other works from 6:00PM to 2:00AM. RIPTA staff also indicated that two of the general Utility personnel - one from the first shift and one from the second shift - also assist the Kennedy Plaza Utility personnel, with one working during the first shift and the other during the second shift. Finally, Table 12 does not list five employees - one foreman and four mechanics - based at the Elmwood Depot who work for the Rhode Island Department of Transportation.

These five employees all work during the day shift and maintain 55 of the Department's vehicles at the Elmwood Depot.

Table 12
Elmwood Depot - RIPTA Staff Assignment Roster by Shift

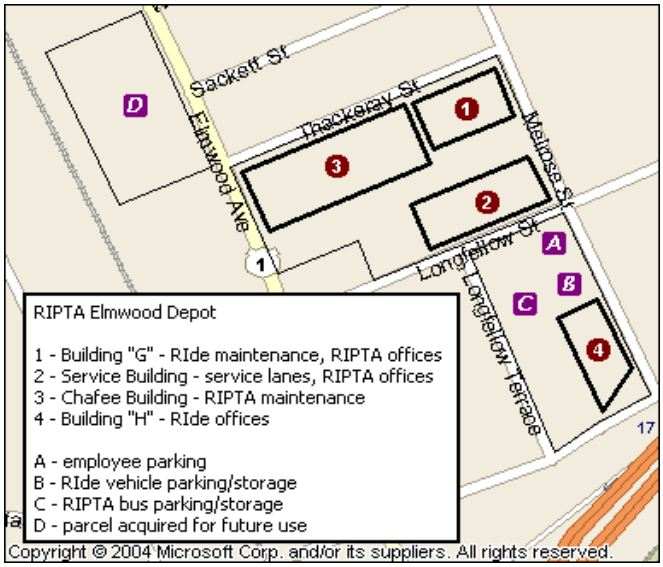
Position	Number of Staff	Staff Assigned		
		First Shift	Second Shift	Third Shift
Assistant General Manager	1	1	--	--
Records Analyst	1	1	--	--
Administrative Secretary	1	1	--	--
Director of Maintenance	1	1	--	--
Technical Support Officer/Warranty	1	1	--	--
Technical Support Officer/Training	1	1	--	--
Manager of Inventory Control	1	1	--	--
Buildings & Grounds Foreman	1	1	--	--
Buildings & Grounds Worker	6	3	2	1
Assistant Superintendent	1	1	--	--
Unit Shop/Stockroom Foreman	1	1	--	--
Unit Shop Mechanic	5	5	--	--
Stock Room Clerk	8	4 (+2 extra)	1	1
Mechanical Foreman	7	3 (+1 extra)	2	1
Body Foreman	1	1	--	--
Utility Foreman	2	--	2 (staggered)	–
Mechanic	52	27 (+4 extra)	11	10
Farebox Mechanic	2	1	1	--
Body Shop Worker	11	6 (+2 extra)	2	1
Utility personnel	31	10	11	10
Kennedy Plaza Utility personnel	5	3	2	--
"Flexible" Utility personnel	3	1	1	1
RIde Maintenance Foreman	2	1	1	
RIde Maintenance Mechanic	10	5	5	
RIde Maintenance Body Shop Worker	2	1	1	
RIde Maintenance Utility personnel	2	1	1	
Total Staff by Shift	**159**	**91**	**43**	**25**

Facilities

The maintenance of the RIPTA fleet is performed at two operating districts, or "depots". This section provides a description of each of these depots and the ability of the facility to accommodate the level of activity sustained at the depot.

Elmwood Depot - The Elmwood Depot is located at 265 Melrose Street in Providence. The general layout of RIPTA's Elmwood Depot is depicted in the site plan presented below in Figure 9.

Figure 9
RIPTA Elmwood Depot - Site Plan



The primary portion of the site is bounded by Elmwood Avenue on the west, Longfellow Street on the south, Melrose Street on the east and Thackeray Street on the north. However, as seen in Figure 9, the southwestern portion of this block is not owned by RIPTA and is not part of the Elmwood Depot. The Elmwood Depot site also consists of another block directly south of the previously described block that is bounded by Longfellow Terrace on the west, Longfellow Street on the north, Melrose Street on the east and Cadillac Drive on the south. The Elmwood Depot has three diesel generators that can be utilized as backups to supply electricity to the facility in the event of a major power failure. Finally, as can also be seen in Figure 9, RIPTA has acquired a parcel located across Elmwood Avenue from the present site for future use.

Four distinct buildings comprise the Elmwood Depot. The first building - known as Building "G" - was constructed in the early twentieth century and was originally utilized to maintain the trolleycar fleet and then the bus fleet. It is located on the northeastern portion of the site. At the present time, Building G is utilized to maintain the RIde demand responsive fleet. Some RIPTA offices are located on the second floor of Building G. In addition, about 20 fixed route buses can be stored inside Building G.

The second building - known as the Service Building - is located on the southeastern portion of the site. It was constructed during the mid-1990's and consists of the service lanes for that portion of the RIPTA and RIde fleets based at the Elmwood Depot as well as offices for RIPTA's Transportation and Maintenance operations staffs. Approximately 80 to 90 fixed route buses can be stored inside the Service Building. The Service Building meets all standards related to the operation of buses fueled by compressed natural gas (CNG).

The third building is both the largest and newest structure at the Elmwood Depot and is known as the Chafee Building. It is located on the northwestern portion of the site and opened in 2002. The Chafee Building is utilized for the maintenance of the RIPTA fixed route fleet and, similar to the Service Building, it meets all standards related to the operation of buses fueled by CNG.

Finally, the fourth building is located on the southern parcel of the Elmwood Depot and is known as Building "H". It houses the offices for the RIde demand responsive service. The southernmost portion of Building H is utilized by the Rhode Island Department of Transportation.

As can be seen in Figure 9, employee parking - as well as the parking and storage of both RIPTA and RIde vehicles - is accommodated on the southern parcel of the Elmwood Depot. Although approximately 110 fixed route vehicles can be stored indoors in both Building G and the Service Building, the remainder of the fixed route fleet - as well as the entire RIde fleet - is stored outdoors. This lack of indoor storage space for the entire bus fleet is a shortfall of the Elmwood Depot. RIPTA staff also cited the security issues sometimes inherent in storing and parking buses outdoors. In addition, Rhode Island's climate is such that indoor storage of major capital items such as rolling stock is preferred.

Finally, as was previously mentioned, RIPTA has acquired a parcel across Elmwood Avenue from the existing Elmwood Depot. This parcel, which is also illustrated in Figure 9, may be utilized in the future to consolidate RIde operations as well as to construct a modern customer service office. Each of the facilities that comprises the Elmwood Depot is described in detail in the following section of the report.

- **Building G** - Building G is equipped with 12 repair bays. Four of the bays are equipped with drive-on lifts and another four are equipped with twin-post lifts. The repair bays in Building G are long enough to accommodate the RIde vehicles. As reported in the 1987 study for the Federal Transit Administration entitled "Transit Garage Planning Guidelines, A Review", a general "rule of thumb" is that one repair bay is needed per ten buses. This guideline is based on having a sufficient number of bus repair bays to accommodate the entire bus fleet. In addition to servicing 132 RIde vehicles, Building G also services another 66 vehicles for a total of 198 vehicles. The additional 66 vehicles include 17 Flex vehicles, 12 Econolines, 13 Explores, 10 Supervisor Vans, eight service trucks, five sweepers and one sanding truck. Using the guideline of one repair bay per ten buses, 12 repair bays are inadequate to service 198 vehicles. It should be noted that even though the guideline relates to buses, having only one repair bay for over 16 vehicles, especially when

many of the vehicles accrue as many miles as RIPTA buses is unacceptable. Building G also houses a stockroom for parts for the RIde fleet as well as an area that accommodates the Buildings and Grounds crew.

A visual inspection of Building G found the building to be well organized, but somewhat dated. Although RIPTA has maintained the structure as necessary, it is nonetheless an old building. Due to the age of the facility, there are improvements (e.g., painting, new lighting, etc.) that would improve the working conditions in the building. RIPTA staff indicated that the four drive-on lifts in Building G were in need of replacement. No other major operational or physical problems were identified in Building G. However, it is clear that this structure was wholly inadequate when it was the primary maintenance facility for RIPTA's fixed route fleet prior to the construction of the Chafee Building. Although it functions well as a maintenance facility for the small transit vehicles that comprise the RIde fleet, it is apparent that the facility was woefully undersized as a maintenance facility for full size buses.

- **Chafee Building** - The Chafee Building is a modern maintenance facility equipped with 26 repair bays and several ancillary support services for the entire heavy maintenance operation. These include engine and transmission repair shops, a battery room, a brake shop, an electronics repair shop, a line shop, a farebox repair shop, a lube room, a tire shop, a stockroom for parts storage, a body shop (with its own materials fabrication shop) and a paint booth. The repair bays in the Chafee Building are arranged in two rows, one along the northern side of the building and one along the southern side of the building. A large central aisle separates the two rows, and circulation within the building is unhindered. Moving from west to east along the northern side of the Chafee Building, there is one repair bay which has no lifts, six repair bays with drive-on lifts (two of which are used primarily for work on the replica trolleys, one for work on the ADA compliance program, and three for HSO work), four repair bays with "in ground" platform lifts (one of which can accommodate front end alignment work) and six more repair bays with drive-on lifts (which are generally used for running repair work and unscheduled repair work). Moving from west to east along the southern side of the Chafee Building, there are five bays with drive-on lifts (one of which has a steam pressure washer to clean the engine compartment, another which is primarily used for HVAC work and three of which are utilized to perform PM inspections), two bays equipped with twin-post lifts (utilized for heavy repair work) and two bays utilized as preparation areas for the adjacent body shop. Finally, in the southeastern portion of the Chafee Building, there is a fully equipped paint booth that can also work on fiberglass components.

  In terms of the number of repair bays, the Chafee Building is adequately sized, given the size of the RIPTA fixed route fleet and the use of the facility by the Rhode Island Department of Transportation (RIDOT) to maintain 55 vehicles. These RIDOT vehicles are not stored at the Elmwood Depot, but - as was previously mentioned - RIDOT has a staff of five permanently assigned to the Chafee Building who work on these vehicles. As was also previously mentioned, a general "rule of thumb" is that

one repair bay is needed per ten buses. This rule is based on having a sufficient number of bus repair bays to accommodate the entire bus fleet. With 258 active buses in RIPTA's entire fixed route fleet, there are 9.9 buses per repair bay in the Chafee Building. This is an acceptable ratio (i.e., 258 vehicles and 26 repair bays yields 9.9 vehicles per repair bay). When it is considered that not all of RIPTA's buses are based at the Elmwood Depot, and that the Newport Depot - which will be described subsequently - accommodates the routine maintenance activities (including PM inspections and running repairs) associated with the vehicles based there, then the ratio improves to only 8.6 buses per repair bay in the Chafee Building (i.e., 223 vehicles and 26 repair bays yields 8.6 vehicles per repair bay). However, when the 55 RIDOT vehicles are accounted for, the ratio worsens to 10.7 vehicles per repair bay in the Chafee Building. Although this ratio is not unacceptable, it nonetheless is indicative of a maintenance facility that leaves very little - if any - room for an increase in the number of vehicles it can service.

A visual inspection of the facility found the Chafee Building to be clean and well organized. No operational or physical problems were identified. It is a modern facility equipped with an impressive array of facilities for the maintenance of RIPTA's bus fleet. However, one shortcoming indicated by RIPTA staff was that engine, transmission and chassis dynos were all needed at the Chafee Building. The facility was designed with these pieces of equipment in mind and has space reserved for them; however, they were never installed. Also, the three fork lifts utilized to shuttle equipment around at the Chafee Building require replacement, according to RIPTA staff.

- **Service Building** - To complete the daily servicing of vehicles, the Elmwood Depot's Service Building is equipped with one farebox probe. The only guideline for the number of farebox probes that should be operational at a facility is that there are a sufficient number of probes to ensure that the queue of buses does not disrupt the flow of traffic inside or outside of the facility. At the Elmwood Depot, fixed route bus operators pull up to the farebox probe where the farebox is probed and its contents are dumped into the vault. The bus operator then enters a bypass lane and bypasses any other service line functions to park the bus. As will subsequently be described in greater detail, the Utility personnel are then responsible for completing the servicing of the fleet. However, because of the design and layout of the Service Building - and not solely due to the availability of a single farebox probe - it appears that the flow of traffic in and around the Elmwood Depot can, in fact, be disrupted during the pull-in process, especially when buses are backed up along Elmwood Avenue awaiting entry into the facility. An additional farebox probe and currency vault could help alleviate this situation and may be desirable at the Elmwood Depot; however, as will be discussed in a subsequent section of this report, several of the issues related to traffic flow are more directly attributable to the design and layout of the Service Building and its placement on the site. Nonetheless, as demonstrated by RIPTA's Service Building, bypass lanes are advisable to help maintain the overall flow of the facility.

The Service Building is furnished with two service lanes in addition to the aforementioned bypass lane. Buses pull into the western side of the Service Building in order to first utilize the farebox probe. At this point, the bus can enter the bypass lane and skip any other service line functions. However, if the bus continues into one of the two service lanes the next station is the fueling station. There is a fuel pump in each service lane as well as one in the bypass lane, for a total of three fuel dispensers. RIPTA utilizes ultra-low sulfur diesel fuel. In addition, it is at the fueling station that all the other fluids in the vehicle - with the exception of transmission fluid - are checked and replaced as part of the daily servicing of the fleet. RIPTA utilizes the "Petrovend" system at the Elmwood Depot to track the amount of fuel and engine oil utilized; at the Elmwood facility, other fluids are not tracked by the Petrovend system. With the availability of the third dispenser in the bypass lane, there is an adequate number of fueling stations for the operations at the Elmwood Depot. However, although there are three dispensers, there is only a single fuel pump. When all three dispensers are being utilized, the speed with which fuel may be dispensed is considerably slowed down. RIPTA staff indicated that the fueling system in the Service Building requires upgrading to address this problem.

Finally, past the fueling station is the bus washer, which also has two lanes. A general guideline noted in the 1987 study for the Federal Transit Administration entitled "Transit Garage Planning Guidelines, A Review" is that operating facilities should be equipped with at least one bus washer for every 100 vehicles that are serviced each night. This value is set so that the assigned bus fleet can be serviced during one work shift. However, the Elmwood Depot's Service Building services not only buses which are part of RIPTA's fixed route fleet, but also that portion of the RIde demand responsive fleet which is based at the Elmwood Depot. Although 223 fixed route vehicles are based at the Elmwood Depot, only 164 of these are required for the peak service. When the 106 RIde vehicles that are based at the Elmwood Depot are factored in, there are 135 vehicles per bus washer. Even if it is assumed that only half of the Elmwood-based RIde fleet utilized the bus washer every night, there would still be more than 108 vehicles per bus washer. It should also be remembered that these figures do not include the entirety of the fixed route fleet based at Elmwood, but only that portion required to meet the peak service requirement. Nonetheless, it is clear that the Elmwood facility requires an additional one or two bus washers (i.e., a total of least three and perhaps as many as four bus washers) in the Service Building so that the entire vehicle fleet based there can be serviced.

The Service Building also has a bus storage area consisting of ten storage lanes. Each lane can normally accommodate eight buses; however, nine buses can be parked in each lane if the clearance between buses is minimized. However, as was previously mentioned, the Service Building can only accommodate the indoor storage of about 80 to 90 buses. With Building G able to store only about 20 additional buses, the majority of the Elmwood-based fixed route fleet (i.e., 113 buses) - as well as the entire RIde fleet - is stored outdoors adjacent to Building H.

A visual inspection of the facility found the building to be clean and well organized. However, as was previously mentioned, there are some operational issues related to the design of the Service Building. During a typical pull-in procedure for a fixed route bus (i.e., one in which the bus operator has not observed any defects), the bus operator enters the property from the west side off of Elmwood Avenue, pulls up to the farebox probe (where the farebox is probed and its contents are dumped into the vault) and then proceeds to enter the bypass lane; at this point, the operator executes a "u-turn" within the Service Building and parks the bus facing west in one of the storage lanes. The Utility personnel then retrieve the bus from its parking spot, exit the building facing west and execute another "u-turn" in the space immediately west of the Service Building so that they can re-enter the building from the west and proceed into one of the two service lanes for fueling and use of the bus washer. During the evening pull-in process, buses which are executing this "u-turn" in front of the Service Building conflict with buses pulling in from Elmwood Avenue, thus slowing down the entire procedure and interrupting the flow of traffic. This contributes to the queue of buses observed along Elmwood Avenue during the evening pull-in period. To add an additional layer of complexity at the Elmwood Depot's Service Building, demand responsive vehicle operators drive their RIde vehicle directly into one of the service lanes where the vehicle is fueled and then through the bus washer themselves. RIde operators then park their vehicles outdoors near Building H.

Another operational issue related to the design of the Service Building involves vehicle pull-outs. When buses are pulling out from one of the storage lanes in the Service Building onto Elmwood Avenue, the sight distance around the church which occupies the extreme southwestern portion of the block is limited. It is especially difficult to see the traffic proceeding north along Elmwood Avenue. Finally, the additional issue of the fueling of CNG-powered buses needs to be addressed. As will be described in greater detail in a subsequent section of this report, RIPTA operates 25 buses fueled by CNG. All of these buses are utilized on fixed route services. Of these, 20 are based at the Elmwood Depot. However, there is no CNG fueling station at the Elmwood Depot. When a CNG bus requires fueling, the Utility personnel must retrieve the bus from the storage lanes, drive it off-site to the gas utility company's CNG fueling station, then return to the Elmwood Depot and continue the service process by running the vehicle through the bus washer. Clearly, this is not an optimal situation and an inefficient use of the Utility personnel's time and RIPTA's resources. It should be noted that RIPTA plans to phase out use of CNG powered buses.

- **Building H** - Building H is utilized by RIPTA solely for the RIde service's administrative offices. A visual inspection of the facility found the building to be clean and well organized. No major physical problems were identified. The southernmost portion of Building H is utilized by the Rhode Island Department of Transportation.

In the aggregate, the Elmwood Depot reflects the "hodge-podge" nature of its construction in stages over the better part of a century. Most importantly, the layout of the buildings on the site, and the lack of a continuous flow pattern in the daily vehicle service function, are indicative of the fact that RIPTA has always had to "make do" with whatever resources were available at the time. RIPTA has never been afforded the opportunity to "start from scratch" at the Elmwood Depot site.

The lack of indoor storage space for the entire bus fleet is an important issue, as storing vehicles outdoors generally shortens their life and deteriorates their overall condition. During the winter, outdoor storage directly adds to the agency's operating costs because "starters" are required to start the bus fleet's diesel engines and let them idle before going into service so that the buses are comfortably warm for the riding public. This practice also incurs the cost of utilizing additional diesel fuel. It would be desirable if both the entire RIPTA fixed route and Flex fleet as well as the RIde demand responsive fleet were stored indoors.

The lack of a CNG fueling station at the Elmwood Depot also contributes to the overall hectic nature of operations at that facility. The practice of having Utility personnel drive buses off-site to a CNG fueling station is an inefficient "necessary evil" that further complicates the daily vehicle servicing process. However, it may not be prudent for RIPTA to invest in a CNG fueling station for the Elmwood Depot in the near future. This is because it is likely that - over the next few years - the combination of the use of ultra-low sulfur diesel fuel to power hybrid diesel-electric engines will produce not only greater fuel efficiency but also emissions levels that are on par with the use of CNG. However, the use of ultra-low sulfur diesel fuel does not require the elaborate safety precautions necessary for CNG operations.

As was mentioned previously, Building G is inadequately sized for its mission (i.e., RIde vehicle maintenance). The Chafee Building is adequately sized for the maintenance of RIPTA's fixed route fleet. However, it should be stressed that there is very little - if any - room for growth at the Chafee facility. Should RIPTA increase service levels significantly in the future, the Chafee facility would need to be expanded or an entirely new facility would need to be constructed. There is already a size issue with Building G.

Finally, the Service Building - as well as its layout and orientation on the site - present the most problems. In addition to the aforementioned issues related to the facility's design and the flow of the daily vehicle service process, it is recognized that the Service Building could likely utilize an additional farebox probe/currency vault station as well as one or two additional bus washers. Given the size of the fleet which must be serviced at this building - as many as 329 vehicles, which includes both RIPTA fixed route buses as well as RIde demand responsive vehicles - the Service Building is clearly undersized. This creates a very busy and hectic working environment. The Service Building's shortcomings appear to impact upon both the operation of the facility and the traffic flow at the Elmwood Depot significantly. RIPTA staff also indicated that the fueling system - which has three dispensers but only one pump - requires upgrading.

Newport Depot - The Newport Depot is located on Coddington Highway on the border between Newport and Middletown. The Newport Depot is considerably smaller than the Elmwood Depot and consists of one structure that integrates all of the necessary functions required at this facility.

The Newport Depot was constructed about ten years ago (i.e., during the mid-1990's) and is utilized for both the storage and maintenance of that portion of the RIPTA fixed route fleet based in Newport. The Newport Depot meets all standards related to the operation of buses fueled by CNG. The Newport Depot also performs some maintenance work on that portion of the RIde demand responsive fleet based there. The Newport Depot has sufficient space to store all 35 of the fixed route buses based there indoors. Two RIde vehicles are also based at Newport; however, they are usually stored outdoors.

The Newport Depot is equipped with four repair bays. Two of the bays are equipped with twin-post lifts and another bay is equipped with an inspection pit. As reported in the 1987 study for the Federal Transit Administration entitled "Transit Garage Planning Guidelines, A Review", a general "rule of thumb" is that one repair bay is needed per ten buses. This guideline is based on having a sufficient number of bus repair bays to accommodate the entire bus fleet. The four repair bays at the Newport Depot are adequate for the number of vehicles based there and result in a ratio of 9.3 vehicles per repair bay, which is within the guideline.

The Newport Depot also contains a service lane, a bypass lane and six bus storage lanes. As was previously mentioned, there is enough space available within the building so that all of the 35 fixed route buses based there can be stored indoors. The two RIde vehicles based at the Newport Depot are typically stored outdoors; however, according to RIPTA staff, if there is inclement weather the RIde contractor will store these vehicles indoors at their facility. The Newport Depot also houses a stockroom for parts, as well as a diesel generator that can be utilized to supply electricity to the facility in the event of a power failure. Unlike the Elmwood Depot, the Newport Depot has a state-owned compressed natural gas (CNG) fueling station on the premises.

To complete the daily servicing of vehicles, the Newport Depot is equipped with one farebox probe. The farebox probe and currency vault are located in the sixth storage lane. The only guideline for the number of farebox probes that should be operational at a facility is that there are a sufficient number of probes to ensure that the queue of buses does not disrupt the flow of traffic inside or outside of the facility. At the Newport Depot, bus operators first enter the building via the bypass lane and then execute a "u-turn" within the building so that they may pull into the last storage lane where the farebox probe is located. This lane is kept empty until all of the other lanes have been filled with buses that have completed their daily service process. At this point, the farebox is probed and its contents are dumped into the vault. The bus operator then pulls out of the building and will typically park the bus on the front apron of the facility. As will subsequently be described in greater detail, the Utility personnel are then responsible for completing the servicing of the fleet. It would appear that the flow of traffic in and around the Newport Depot is not disrupted in any significant manner by the depot's having a single farebox probe.

The front apron of the building is large enough to allow sufficient room for the required maneuvering of buses, and the property is large enough that buses do not typically back-up and queue onto Coddington Highway.

The Newport Depot is furnished with a service lane in addition to the aforementioned bypass lane. When buses pull into the service lane, the first stop is the fueling station. There is a fuel pump which utilizes ultra-low sulfur diesel fuel. The Newport Depot also has a CNG fueling station on premises. In addition, it is at the fueling station that all the other fluids in the vehicle - with the exception of transmission fluid - are checked and replaced as part of the daily servicing of the fleet. RIPTA utilizes the "Petrovend" system at the Newport Depot to track all of the fluids utilized by each vehicle, with the exception of windshield washer fluid. It would appear that the single fueling station is adequate for the operations at the Newport Depot.

Finally, past the fueling station is the bus washer. A general guideline noted in the 1987 study for the Federal Transit Administration entitled "Transit Garage Planning Guidelines, A Review" is that operating facilities should be equipped with at least one bus washer for every 100 vehicles that are serviced each night. Clearly, a single bus washer is adequate for the operations at the Newport Depot. However, RIPTA staff indicated that the Newport Depot's bus washer required replacement.

There is a minor operational issue related to the design of the Newport Depot. During a typical pull-in procedure (i.e., one in which the bus operator has not observed any defects), the bus operator enters the property from the north off of Coddington Highway, pulls into the building via the bypass lane, executes a "u-turn" within the building and enters the sixth storage lane, where the farebox probe and currency vault are located. At this point, the farebox is probed and its contents are dumped into the vault. As previously mentioned, the operator then exits the building and parks the bus on the front apron of the facility. The Utility personnel then retrieve the bus from its parking spot and enter the building via the service lane for fueling and use of the bus washer. They then perform a u-turn within the building and park the bus in one of the storage lanes. During the evening pull-in process, buses that are re-entering the building may sometimes conflict with buses pulling in from Coddington Highway, thus slowing down the entire procedure and interrupting the flow of traffic. However, it would appear that the size and layout of the Newport Depot's parcel (i.e., including the ample size of the facility's front apron) is such that no back-ups form onto Coddington Highway. Although a model facility would keep all vehicle service functions in a "straight line" flow pattern (i.e., first the farebox probe, then the fueling station, then the bus washer and then the storage lanes), RIPTA staff indicated that there were some issues involved in the acquisition of the property for the Newport Depot which did not allow the agency to design the facility in the manner which they would most have preferred. Nonetheless, it is only a minor issue at the Newport Depot and does not have any significant impact on the operation of the facility.

A visual inspection of the facility found the Newport Depot to be clean and well organized. No significant operational or physical problems were identified. It is a relatively modern building equipped with all the facilities necessary for the routine maintenance of that portion of the RIPTA bus fleet that is based there. However, two shortcomings indicated by RIPTA staff were that both the bus washer as well as the steam pressure washer require replacement. Also, similar to the situation at the Elmwood Depot, according to RIPTA staff the fork lift utilized to shuttle equipment around the Newport Depot also requires replacement.

Finally, it should be noted that the Newport Depot would require some investment in its facilities should the number of buses based there increase by any significant amount. This is especially true in terms of the number of repair bays and the ability to provide indoor storage.

Staffing

This section discusses the staffing level at both of RIPTA's depots as well as some of the policies and procedures followed to ensure continuous staff development.

Staff Size Ratios - There are several "rules of thumb" regarding appropriate staff ratios that have been developed through the review of maintenance staff levels at transit systems throughout the country. These guidelines are specified in the "Characteristics of Urban Transportation Systems", September 1992, prepared for the FTA. One guideline is that there should be one mechanic for every 3.00 to 3.50 peak buses utilized in fixed route service. Table 13 provides the ratio of mechanics to peak vehicle requirements for both of RIPTA's depots as well as for RIPTA overall.

Table 13
RIPTA Peak Vehicles per Mechanic Ratios

Depot	Peak Vehicles	Mechanics	Peak Vehicles Per Mechanic
Elmwood	164	59	2.78
Newport	28	6	4.66
Total	192	65	2.95

As the table shows, the Elmwood Depot appears to be overstaffed, while the Newport Depot appears to be understaffed. However, when taken together, RIPTA's maintenance function appears to be properly staffed. It should be kept in mind that five of the Elmwood Depot's mechanics work in the Unit Shop, a function that is unique to that facility and unrelated to the daily "routine" maintenance of the fleet. If these five mechanics are removed from the total number employed at the Elmwood Depot, then the ratio of peak vehicles per mechanic at the Elmwood Depot moves to 3.04, which is within the guidelines.

In addition, if the Unit Shop's five mechanics - who primarily work on heavy vehicle overhauls and are not part of the daily "routine" maintenance of the fleet, as previously mentioned - are removed from the systemwide calculation, then the ratio of peak vehicles per mechanic for RIPTA as a whole moves to 3.20, which is also within the guidelines. Nonetheless, when utilizing the ratio of peak vehicles per mechanic, the Newport Depot appears to be understaffed.

A more refined measure of the appropriateness of maintenance staff size is the ratio of vehicle miles operated to the number of mechanics. The general rule from the above noted source states that for "city" operations there should be one mechanic for every 100,000 to 125,000 annual vehicle miles, while for "suburban" operations the ratio should be one mechanic for every 150,000 to 175,000 miles. This measure allows for a more comprehensive understanding of the level of maintenance work that is needed at a particular garage. Table 14 provides the ratios for both of RIPTA's depots as well as for RIPTA overall using annual vehicle miles figures.

Table 14
RIPTA Vehicle Miles per Mechanic Ratios

Depot	Annual Vehicle Miles	Mechanics	Vehicle Miles per Mechanic
Elmwood	7,273,865	59	123,286
Newport	1,394,087	6	232,348
Total	8,667,953	65	133,353

As with the peak vehicles per mechanic figure, the Elmwood Depot ratio is at the suggested level, thus implying that the facility is properly staffed. The Newport Depot's ratio is again higher than the suggested level, thus implying that the facility is understaffed. However, when the five mechanics based at the Unit Shop at the Elmwood Depot are removed from the calculation, that facility's ratio moves to 134,701 vehicle miles per mechanic - which is above the guideline for an urban garage - and the system's aggregate ratio moves to 144,466 vehicle miles per mechanic. Given the statewide nature of the RIPTA system - with a mix of urban, suburban and rural operating environments - the vehicle miles per mechanic for the system as a whole is appropriate.

The staffing levels by shift, which were previously discussed, were also examined. Given the level and type of work completed on each shift, it was determined that the staff resource allocations are appropriate.

When the function and role of the Unit Shop are considered, the Elmwood Depot appears to be appropriately staffed, while the Newport Depot appears to be understaffed. Although this would - at first glance - appear to imply that additional staff should be hired for the vehicle maintenance function at the Newport Depot, when both the suburban nature of much of this depot's service area and the "satellite" nature of the facility are considered the need for any additional staff is questionable.

Staff Development - RIPTA staff indicated that it is now easier to hire "quality" maintenance personnel who already have a working knowledge of diesel powerplants. When someone is hired, they enter into a 90 day probationary period. During this time, they receive what amounts to "on-the-job" training, as well as manufacturer-based training programs. Their work and reports are all overseen by the foremen. RIPTA does insist, however, that all probationary mechanics immediately learn how to work on brake systems due to their safety-sensitive nature. After being hired, there is a three-year progression until they reach the highest wage level.

Upward movement is relatively limited at RIPTA's maintenance operations. Although there is some lateral movement among jobs, it can take as many as ten to 15 years for a mechanic to become a foreman. There are three "picks" every year when maintenance staff can select their shifts and locations, based on seniority. However, staff may only transfer between garages during the January pick.

All of RIPTA's maintenance staff is represented via a collective bargaining agreement; Local 618 represents the staff while Local 618A represents supervisors and foremen. Employees receive full benefits, including medical coverage, dental coverage, a uniform allowance, a tool allowance and a defined benefit pension. Wage rates for mechanics start at $15.95 per hour, which is 75 percent of the top wage rate. As was previously mentioned, there is a three-year progression until they reach the highest wage level.

Revenue Fleet

This section discusses the overall makeup of the RIPTA revenue fleet as well as the fleet assigned to each operating district.

Fleet Composition - As of April 2004 RIPTA had an active fixed route bus fleet of 258 vehicles. With the exception of 25 buses that utilize compressed natural gas (CNG) as fuel, all of these buses are equipped with diesel engines and utilize ultra-low sulfur diesel fuel. The entire RIPTA fixed route fleet is accessible to the disabled. In addition to the fixed route fleet, the RIde demand responsive fleet consists of 132 vehicles, all of which are powered by diesel fuel and all of which are accessible to the disabled. RIPTA operates 108 RIde vehicles directly, while the remaining 24 are operated by contractors. Table 15 provides a breakdown of the RIPTA fixed route fleet by vehicle type and age.

Table 15
RIPTA Fixed Route Fleet

Vehicle Type	Fuel Type	Age	Total in Fleet
1992 TMC T80206	Diesel	14	46
1998 TMC T80206	Diesel	8	50
1999 TMC T60206	Diesel	7	5
1999 Chance Trolley AH28CNG	CNG	7	15
2000 Ford E450 *(26 feet long)*	Diesel	6	4
2000 Novabus T80206	Diesel	6	28
2001 Orion Bus Industries Orion V	Diesel	5	27
2001 Ford E450 *(26 feet long)*	Diesel	5	2
2001 Ford E450 *(20 feet long)*	Diesel	5	4
2001 Chance Trolley AH28CNG	CNG	5	4
2002 Ford E450 *(26 feet long)*	Diesel	4	5
2002 New Flyer C30LF Low Floor	CNG	4	5
2004 CCI AH28CNG	CNG	2	1
2004 Ford E450 *(26 feet long)*	Diesel	2	2
2004 Orion Bus Industries Orion V	Diesel	2	24
2005 Gillig Low Floor	Diesel	1	36
Total			**258**
Average Age (years)			**6.5**

As Table 15 shows, the average age of the RIPTA fixed route bus fleet is 6.5 years, which is slightly older than it should be given the make-up of the fleet. This is because 17 of RIPTA's fixed route buses - or 6.6 percent - are small transit vehicles. These vehicles, which are Ford body-on-chassis conversions (i.e., "cutaways"), have an economic useful life of only five years. The four small transit vehicles purchased in 2000 are all past due for replacement. In addition, the six small transit vehicles purchased in 2001 are due for replacement this year. Finally, the 46 buses purchased in 1992 were put through a total rehabilitation program and will be due to be replaced in 2009. The average age of a revenue fleet should be equal to or less than half the average useful life of the vehicles comprising the fleet, which in RIPTA's case would be 5.8 years.

RIPTA's fixed route fleet is varied, with two different types of fueling systems and six different vehicle manufacturers - Novabus is the successor company to TMC, while CCI is the successor company to Chance. However, there are really only three basic types of vehicle utilized by RIPTA: a standard transit bus, a replica "trolley" for downtown-oriented shuttle services and a small transit vehicle utilized on either "Flex Service" by RIPTA or for demand responsive service by RIde. Given the issues associated with stocking parts from six different equipment manufacturers, RIPTA's future fleet plans should attempt to minimize the number of vehicle manufacturers. In addition, as was previously mentioned, the future purchase of CNG-powered vehicles is likely unnecessary on an environmental basis given the recent advances in the development of hybrid diesel-electric engines coupled with the use of ultra-low sulfur diesel fuel.

Table 16 provides a breakdown of the RIde demand responsive fleet by vehicle type and age. All of the vehicles utilized in the RIde service are small transit vehicles whose economic useful life is five years. In addition, they all utilize diesel fuel and are accessible to the disabled.

Table 16
RIde Demand Responsive Fleet

Vehicle Type	Age	Total in Fleet
1997 E40	9	10
1999 GC2 *(26 feet long)*	7	9
1999 GC2 *(22 feet long)*	7	18
2001 Ford E450 *(26 feet long)*	5	11
2001 Ford E450 *(22 feet long)*	5	24
2002 Ford E450 *(26 feet long)*	4	24
2004 Ford E450 *(26 feet long)*	2	36
Total		**132**
Average Age (years)		**4.7**

As Table 16 shows, the average age of the RIde demand responsive fleet is 4.7 years, which is older than it should be given the make-up of the fleet. This is because all of the RIde service's buses are small transit vehicles. These vehicles, typically Ford body-on-chassis conversions (i.e., "cutaways"), have an economic useful life of only five years. The ten small transit vehicles purchased in 1997, as well as the 27 purchased in 1999, are all past due for replacement. In addition, the 35 small transit vehicles purchased in 2001 are due for replacement this year. The average age of a revenue fleet should be equal to or less than half the average useful life of the vehicles comprising the fleet, which in the RIde service's case would be 2.5 years.

Equipment Allocation - At a multi-facility operation such as RIPTA, it is important to assess whether each facility is furnished with an appropriately sized spare fleet and that there is a reasonable justification for any disproportionate allocations of older or less desirable vehicles at any one facility. This section examines both of these issues.

Federal Transit Administration funding mandates state that a spare fleet should be no greater than 20 percent of the peak vehicle requirement. Table 17 provides the spare ratios for both depots as well as for RIPTA's fixed route bus operations overall.

Table 17
Spare Ratio by Depot

Depot	Total Fleet	Peak Vehicle Requirement	Spare Fleet	Spare Ratio (Percent)
Elmwood	223	164	59	36.0
Newport	35	28	7	25.0
Total	**258**	**192**	**66**	**34.4**

As Table 17 shows, both of the depots - as well as RIPTA overall - have spare ratios that are larger than the suggested range. RIPTA's fixed route fleet is larger than would be expected and is reflective of the additional resources required to maintain a fleet whose average age is slightly higher than it should be. Although the spare ratio is high, RIPTA staff indicated that it has improved over the past few years and is expected to continue to improve. In fact, the peak vehicle requirement is expected to increase with the September 2006 schedule pick.

Another reason the spare ratio is unusually high at the present time involves the issue of the diesel particulate filters. RIPTA staff indicated that approximately 20 of the Orion V buses are out-of-service on any given day while awaiting replacement diesel particulate filters. These out-of-service times can be lengthy. The diesel particulate filters are repeatedly failing much more quickly than their design calls for and RIPTA is pursuing this warranty issue with the manufacturer.

Another issue examined by the consultant team is the composition of the fixed route fleet assigned to each depot. Table 18 provides a breakdown of the fixed route fleet by vehicle type for both of the depots. Vehicles are assigned to depots based on several factors including the ability of the facility to accommodate certain vehicles, the geographic location of the depots relative to the terminal points of the bus routes, capacity requirements on the routes operated out of the depot as well as the type of service operated by the depot.

As Table 18 shows, a variety of buses (i.e., both regular transit buses as well as replica "trolleys") are assigned to both of RIPTA's depots. However, the small transit vehicles - such as those utilized on Flex Service routes - are exclusively assigned to the Elmwood Depot. It should be noted that although almost the entire portion of the RIde demand responsive fleet directly operated by RIPTA is based at the Elmwood Depot, two of the RIde demand responsive service vehicles are based at the Newport Depot, as was previously mentioned. Table 18 also shows that the average age of both of the fleets assigned to the depots is either 6.3 or 6.6 years, which is in keeping with the total fleet average age of 6.5 years.

Table 18
Depot Assignments for RIPTA's Fixed Route Fleet

Vehicle Type	Fuel Type	Elmwood	Newport	Total in Fleet
1992 TMC T80206	Diesel	46	--	46
1998 TMC T80206	Diesel	28	22	50
1999 TMC T60206	Diesel	5	--	5
1999 Chance Trolley AH28CNG	CNG	10	5	15
2000 Ford E450 *(26 feet long)*	Diesel	4	--	4
2000 Novabus T80206	Diesel	28	--	28
2001 Orion Bus Industries Orion V	Diesel	27	--	27
2001 Ford E450 *(26 feet long)*	Diesel	2	--	2
2001 Ford E450 *(20 feet long)*	Diesel	4	--	4
2001 Chance Trolley AH28CNG	CNG	4	--	4
2002 Ford E450 *(26 feet long)*	Diesel	5	--	5
2002 New Flyer C30LF Low Floor	CNG	5	--	5
2004 CCI AH28CNG	CNG	1	--	1
2004 Ford E450 *(26 feet long)*	Diesel	2	--	2
2004 Orion Bus Industries Orion V	Diesel	24	--	24
2005 Gillig Low Floor	Diesel	28	8	36
Total		**223**	**35**	**258**
Average Age (years)		**6.6**	**6.3**	**6.5**

The only issue apparent in the disposition of the RIPTA fixed route fleet relates to fuel type. At the Elmwood Depot, 20 buses are powered by compressed natural gas (CNG). Only five of these are standard transit buses, the remaining 15 are replica "trolleys" utilized on the Providence Link routes. However, as was previously mentioned, the Elmwood Depot has no CNG fueling station on-site. Conversely, the Newport Depot - which does have an on-site CNG fueling station - has only five CNG-powered vehicles assigned to it; all of these are replica "trolleys". Because of the previously discussed difficulties involved in fueling the CNG vehicles at the Elmwood Depot, RIPTA might consider assigning the five CNG powered buses based at the Elmwood Depot to the Newport Depot and moving five of the diesel powered buses based at the Newport Depot back to the Elmwood Depot. This would minimize the number of CNG vehicles at the Elmwood Depot and make better use of the CNG fueling station at the Newport Depot. The "trade-off" in this arrangement is that an additional vehicle type (i.e., the standard transit bus built by New Flyer) would be assigned to the Newport Depot. However, one less type of vehicle would be assigned to the Elmwood Depot, since the five CNG-powered New Flyers are the only buses built by that manufacturer owned by RIPTA.

Besides the issues associated with the CNG-powered buses cited previously, there are generally no major issues of concern in terms of the number and type of vehicles assigned to each of the depots. Vehicles are also reassigned to certain depots throughout their service life. There also is no overly disproportionate concentration of old equipment in either depot.

Condition - Visual inspections of a sample of RIPTA buses were performed at the Elmwood Depot during April of 2006. A total of 12 buses, or almost five percent of the fixed route revenue fleet, were inspected for attributes affecting the passenger's riding experience and the public's perception of the vehicles. This includes the cleanliness of the exterior and interior of the bus, the condition of the seats and floor as well as unaddressed body damage, exterior paint and glass condition. Each of these attributes were rated on a scale of 1 to 5, which represent the following:

Rating	Significance
5	Excellent Condition
4	Good Condition
3	Poor Condition, but fit for use in revenue service
2	Unacceptable Condition - Immediate Attention is needed
1	Deplorable Condition - Vehicle should no longer be used in revenue service

Table 19 provides the average results for the buses that were inspected. As Table 19 shows, the condition of the RIPTA fixed route bus fleet is rated between good and excellent for most of the inspected attributes.

Table 19
Condition of RIPTA Fixed Route Fleet

Exterior Condition				Interior Condition		
Body	Paint	Clean	Glass	Floor	Seats	Clean
4.8	4.0	4.4	4.2	3.9	4.9	3.6

On average, only two attributes rated less than "good". These were the condition of the floor as well as the overall cleanliness of the interiors. It should also be noted that there was much scratch graffiti, or "scratchiti", present on the buses. The vehicle inspections discovered almost no cracks or scratches in the glass that were not the result of vandalism.

The cleanliness of bus interiors was the lowest rated attribute. The cause of the lower rating should be discussed further. The inspections were performed in the middle of the service day and therefore the vehicles had not yet been serviced or swept. Due to this, the random coffee cup or newspaper on buses were noted but the majority of the low ratings for interior cleanliness were the result of scratchiti on the glass panels separating the rear stairwell from the passenger seats as well as marker graffiti or scratchiti on seats or seat backs.

However, RIPTA should especially be commended on the condition of its passenger seats. All seats that were observed were clean and comfortable, with none damaged, torn or vandalized in any significant manner.

It should be noted that the consultant team completing the inspections found the RIPTA bus fleet to be, in the aggregate, in very good to excellent condition. The bodies of the buses inspected had very few defects and corrosion due to rust was not observed on any bus. RIPTA seems to maintain the quality of the paint job on the revenue fleet in good condition; this is a visible change from the condition and image of the fleet as few as ten years ago. Very few major scratches or chips were observed. The main problem with the paint job of the buses tended to be long scratches along the top of the door side of the bus. These types of scratches are caused by contact with trees and are common for buses operating on local roads.

While the attributes receiving lower ratings are generally due to vandalism rather than improper upkeep by RIPTA, these are serious issues from the standpoint of the passenger and the general public. The presence of scratchiti on the windows and graffiti on the interior walls and on the backs of seats creates an impression of uncleanliness.

Preventive Maintenance - RIPTA has a comprehensive preventive maintenance (PM) program in place for its revenue bus fleet. This includes four separate classifications of vehicle inspection. The inspections are performed every 3,000 miles; the four types of PM inspections are: the 3,000-mile inspection, the 6,000-mile inspection, the 12,000-mile inspection and the 24,000-mile inspection. Each of the inspection regimes includes all of the items completed during the previous stage of inspection, as well as new checklist items for that stage of PM inspection. Most importantly, RIPTA maintenance staff check and replace the engine oil every 6,000 miles. RIPTA performs the PM inspections on a rotating basis until the 24,000-mile

inspection is reached; at this point the entire process begins again. A PM inspection occurs every 3,000 miles and the rotation among the four types of PM inspection is as follows: the 3,000-mile check, then the 6,000-mile check, then another 3,000-mile check, then the 12,000-mile check, then another 3,000-mile check, then another 6,000-mile check and then the 24,000-mile check. The rotation then starts anew with the next 3,000-mile check. RIPTA staff indicated that they would prefer to utilize fuel consumed as the basis for selecting PM intervals, but they currently utilize vehicle mileage.

On Thursdays, a report is printed which indicates which vehicles are due for their PM inspections. The inspection intervals are based on the mileages entered during fueling in the Petrovend system. Because mileage data entered manually may contain inadvertent errors, the supervisory staff at RIPTA checks the mileage data frequently to ensure that it is correct. On a typical day, approximately 21 vehicles are undergoing PM inspections. This breaks down to 12 fixed route buses (i.e., nine at the Elmwood Depot and three at the Newport Depot) and nine RIde vehicles.

As was previously mentioned, RIPTA vehicles undergo PM inspections every 3,000 miles. However, there is a 500-mile "window" on either side of the 3,000-mile interval during which a vehicle may undergo its PM inspection and still be considered to not have "missed" the inspection interval. Consistently performing inspections outside of the acceptable window of the prescribed interval - either early or late - is something to be avoided. Performing inspections too early can be an ineffective use of resources and can reduce overall cost efficiency, while late inspections can have an adverse affect on the proper operation and long term viability of the vehicle. Generally, a good performance is considered a 90 percent on-time completion rate.

According to RIPTA staff, all of the PM inspections that were due during the period between March 23rd and March 29th were completed. However, an examination of the maintenance records for a ten percent sample of RIPTA's fleet was performed in order to determine what percentage of PM inspections were actually completed within the allotted mileage "window". The results of this examination are shown in Table 20.

Table 20
PM Inspections Completed Within 500 Miles of Mileage Due

Bus Number	Number of Intervals	Lowest Interval	Highest Interval	Percent Met	Percent Unmet	Percent Late	Percent Early
Elmwood Depot							
0515	6	1,987	3,601	34	66	50	16
0516	6	1,227	3,779	67	33	17	16
0517	7	2,678	3,483	100	0	0	0
0518	6	2,631	3,546	84	16	0	16
0519	6	1,479	3,845	67	33	17	16
0520	6	1,142	3,385	84	16	0	16
0521	7	868	3,686	57	43	14	29
9930	6	2,664	3,633	84	16	16	0
9205	2	3,138	4,014	50	50	50	0
9845	6	2,780	3,397	100	0	0	0
9846	8	1,014	3,467	63	37	0	37
9848	7	2,189	4,038	72	28	14	14
0461	7	2,362	3,849	57	43	29	14
0462	1	3,268	3,268	100	0	0	0
0463	4	3,219	3,478	100	0	0	0
0030	6	2,733	3,457	100	0	0	0
0031	7	2,175	4,097	72	28	14	14
0032	7	2,286	3,516	72	28	14	14
0121	5	3,037	3,900	80	20	20	0
0122	5	2,076	3,414	80	20	0	20
0123	6	2,414	3,686	50	50	33	17
0125	6	1,302	5,985	34	66	50	16
Subtotal	127	868	5,985	72	28	16	12
Newport Depot							
0545	8	1,711	3,199	88	12	0	12
0546	2	2,078	2,574	50	50	0	50
9801	9	1,959	3,362	67	33	0	33
Subtotal	19	1,711	3,362	74	26	0	26

As can be seen in Table 20, the examination of RIPTA's maintenance records revealed that only about 72 percent of the PM inspections were completed within the 500 mile "window" of the 3,000-mile inspection interval. The other 28 percent were not completed within this interval, with 13 percent of PM inspections being completed late and 15 percent being completed early. As was previously stated, a good performance is considered a 90 percent on-time completion rate. In addition, an examination of the maintenance records also indicated that engine oil changes are occurring approximately every 6,000 miles.

According to RIPTA staff, all of the tasks performed as part of the PM inspections mostly exceed the vehicle manufacturers' recommended standards. This allows RIPTA to address potential problems before they might result in a vehicle defect. For example, engine oil is tested whenever engine oil is changed. A task checklist for each of the PM inspections is provided to mechanics and completed while the work is being done. In addition, other maintenance items are completed on a seasonal basis, rather than being based on mileage. For example, RIPTA replaces air dryers prior to both the start of summer as well as the start of winter.

Both of RIPTA's depots are also equipped with a steam clean unit. It is an advisable practice to perform a steam clean of the undercarriage of the vehicle within 48 hours prior to each PM inspection. This allows for more effective location of leaks or other problems. The most advisable practice is to put the vehicle back into service for one to two days after the steam clean and before the inspection. Basically, the number of steam cleans should equal the number of PM inspections performed. It should be noted that steam cleans should be considered an "above and beyond" practice, that is, highly beneficial but not essential. However, as was previously mentioned, RIPTA staff have indicated that the steam pressure washer at the Newport Depot needs replacing.

Running Repair - Repair work on RIPTA buses is initiated when a problem is discovered in one of several ways. This includes defects discovered by vehicle operators during a pre-trip inspection or while completing a vehicle revenue service run. These defects would be recorded on an Operator's Vehicle Condition Report, or "defect card". In most cases, the cards would be left on the vehicles in the ticket cutter and collected by the Utility personnel during the vehicle servicing process. The Utility personnel would give the card to the Utility Foreman who, in turn, gives it to the Mechanical Foreman. Vehicle defects may also be identified during daily vehicle servicing by the Utility personnel. When this occurs, the Utility personnel will report the problem to the Utility Foreman who again reports it, in turn, to the Maintenance Foreman. The defective bus is placed in a running repair maintenance bay for repairs. According to RIPTA staff, most minor defects are addressed and repaired the same evening that they are initially reported. In the morning, the defect cards are checked in order to determine which buses may not pull-out into revenue service.

Also, mechanics themselves may identify defects during PM inspections or while making other running repairs. In these cases, the mechanic enters information regarding the defect in the notes associated with the work order. The foreman then reviews this information and may initiate an additional work order for the repair.

As was previously mentioned, RIPTA completes most major body repair work in-house. The Elmwood Depot is equipped with a paint booth; it also has the ability to complete frame repair work. Vehicles which are based at the Newport Depot and which require body work must be sent to the Elmwood Depot for that work to be completed.

RIPTA should also consider utilizing the Petrovend system itself to identify needed repairs. For example, the system tracks the fuel and fluids consumption of all vehicles. This information is manually entered into the computer system by the Utility personnel. Monitoring of this information could help identify any vehicles with unusually high fluid consumption rates. Based on this monitoring, a work order can be created to investigate the problem.

Timely attention to needed repairs requires the prompt and accurate reporting of defect information from operators, Utility personnel and mechanics. RIPTA relies on its foremen to supervise the timely completion of repairs, and senior maintenance personnel review vehicle defect reports - as well as roadcall reports, which will be discussed subsequently - on a daily basis. Finally, it should be noted that RIPTA staff indicated that there have recently been major problems with the diesel particulate filters on the Orion V buses. Sometimes, as many as 20 buses are out-of-service on a daily basis due to this problem. As was previously mentioned, the diesel particulate filters are repeatedly failing much more quickly than their design calls for and RIPTA is pursuing this warranty issue with the manufacturer.

Vehicle Reliability - Another manner by which to assess the performance of a particular vehicle maintenance program is to review how reliable the vehicles are while in service. A guideline for a good maintenance program is specified in the "Characteristics of Urban Transportation Systems", September 1992, prepared for the FTA. This guideline - as well as experiences of other transit systems - is that fixed route transit vehicles should not experience road failures any more than once every 3,000 miles when all types of mechanical failures are considered. When only "major" mechanical failures are considered (i.e., those that result in the inability of a bus to complete its trip), then fixed route transit vehicles should not experience road failures any more than once every 4,000 to 6,000 miles. Data regarding revenue vehicle system failures reported by RIPTA to the National Transit Database (NTD) was reviewed to determine RIPTA's performance in this area. Table 21 provides information regarding a four-year trend in mean distance between failures utilizing both "major" mechanical failures as well as all failures.

Table 21
RIPTA Fixed Route System - Mean Distance Between Failures

Measure	2001	2002	2003	2004
Total Vehicle Miles (1.000's)	8,051.1	8,513.0	9,164.4	8,972.0
Major Mechanical Failures	2,297	1,714	1,450	1,542
Mean Distance Between Major Failures	3,505	4,967	6,320	5,818
All Mechanical Failures	4,066	3,459	3,168	3,252
Mean Distance Between All Failures	1,980	2,461	2,893	2,759

As Table 21 shows, RIPTA's performance in terms of the average distance between vehicle failures while in service has greatly improved since 2001, hitting a peak in 2003. During the 2004 report year for the NTD, RIPTA was precisely where it should be in terms of the mean distance between major failures, with 5,818 miles between these types of failures. The guideline calls for the rate to fall between 4,000 and 6,000 miles. However, in terms of the mean distance between all failures, RIPTA only had 2,759 miles between all types of failures during the 2004 report year for the NTD. This falls short of the guideline of 3,000 miles between all types of failures.

Nonetheless, although there is still opportunity for improvement, the overall improvement since 2001 has an important bearing on the cost effectiveness of the vehicle maintenance function.

Servicing - After every service run, RIPTA vehicles are serviced by the Utility personnel. The majority of the daily servicing activity on the fixed route vehicle fleet takes place between 6:00PM and 2:00AM. As was previously mentioned, fuel and fluids are replenished and the exterior of the bus is washed. RIPTA also sweeps out the interior of the buses daily. The interior is typically swept out while the bus is in a storage lane awaiting Utility personnel to operate it through the service lane. With some minor exceptions, the procedures for the daily servicing are the same at both of RIPTA's depots. However, one important difference is that the floors of all buses at the Newport Depot are mopped on a daily basis. The appropriate fuel and fluid numbers are recorded by vehicle through the Petrovend system. As was previously noted, the fueling function at the Elmwood Depot for the CNG-powered buses is problematic. The other issues worthy of note concern the flow of the servicing function at the depots, which were discussed previously.

Finally, the frequency of major interior cleanings - sometimes known as "detailed cleanings" or "housecleans" - should be discussed. RIPTA completes a detailed interior cleaning of each bus approximately once every 3,000 miles. This means a bus interior is "housecleaned" about once every month. These procedures typically involve a more comprehensive and thorough cleaning of the vehicle's interior than is done on a daily basis. RIPTA could likely increase the frequency of its detailed interior cleanings; the only two attributes rated less than "good" in the vehicle condition observations were the condition of the floor as well as the overall cleanliness of the interiors. For example, the Southeastern Pennsylvania Transportation Authority (SEPTA) in Philadelphia completes a detailed interior cleaning of every bus approximately once every 17 to 18 days.

Major Overhauls/Rebuilds - The Elmwood Depot is responsible for RIPTA's mid-life vehicle overhaul program, known as the "Heavy Scheduled Operation" (HSO). The unit repair shop at the Elmwood Depot completes this major overhaul, which also includes work on a vehicle's undercarriage, on its heating, ventilation and air conditioning (HVAC) system and on its compliance with the Americans with Disabilities Act (ADA). ADA compliance may include items such as repairing wheelchair restraints and making certain all audible signals are functioning.

Vehicle Readiness - Discussions with RIPTA staff indicated that, at the present time, the issues regarding the diesel particulate filters on the Orion V fleet were the most pressing concern with regards to vehicle readiness and parts procurement. These issues will be covered in greater detail in another section of this report.

Roadcalls - If an operator encounters trouble on the road with their vehicle, their first step is to radio the dispatcher. Depending on what the operator is reporting is wrong with the vehicle, the dispatcher can consult a troubleshooting checklist and attempt to have the operator rectify the problem. The dispatcher also opens a job order in the vehicle maintenance computer system and gives it an "8900" series job order number, identifying it as a job order originated via an operator. In this way, the vehicle is checked when it returns to the garage no matter what the outcome of the troubleshooting checklist may be.

If the vehicle must be taken out of service, a replacement bus is dispatched, as well as the service vehicle with a roadcall mechanic. The replacement bus allows the passengers and the operator to continue their trip. The service vehicle and mechanic will try to repair the bus; if they cannot, and the bus is immobilized, they will contact a towing service to bring the vehicle back to the Elmwood Depot.

All "road failures" are tracked at RIPTA, even when a mechanic is not dispatched or a bus is not taken out of service. This allows maintenance personnel to determine which failures are actually chargeable to maintenance. It should be noted that when the Newport Depot's buses are near Providence, the Elmwood Depot's mechanics may be sent out on roadcalls for these vehicles (i.e., the Newport Depot does not have to send someone if the bus is closer to the Elmwood Depot). In addition, one of Elmwood Depot's roadcall mechanics is stationed at Kennedy Plaza in case he is needed at that facility.

Conclusions and Recommendations - Based on the review of the vehicle maintenance function, the following recommendations have been developed. The following recommendations, with some exceptions, generally represent potential improvements that could be made to already basically sound maintenance practices.

- At the Elmwood Depot, the layout of the buildings on the site - and the lack of a continuous flow pattern in the daily vehicle service function - affect the functioning of the facility and make it less efficient.

- The lack of indoor storage space for the entire bus fleet at the Elmwood Depot is an important issue. It would be desirable if both the entire RIPTA fixed route fleet as well as the RIde demand responsive fleet were stored indoors.

- The lack of a CNG fueling station at the Elmwood Depot also contributes to the overall hectic nature of operations at that facility. The practice of having Utility personnel drive buses off-site to a CNG fueling station is an inefficient "necessary evil" that further complicates the daily vehicle servicing process. However, it should be noted that RIPTA plans to phase out its CNG fleet.

- One shortcoming indicated by RIPTA staff was that engine, transmission and chassis dynos were all needed at the Chafee Building. The facility was designed with these pieces of equipment in mind and has space reserved for them; however, they were never installed. Also, the three fork lifts utilized to shuttle equipment around at the Chafee Building require replacement, according to RIPTA staff.

- Although both the Chafee Building is at the present time adequately sized, it should be stressed that there is very little - if any - room for growth. Should RIPTA increase service levels in the future, this facility would need to be expanded or an entirely new facility would need to be constructed. Since Building G is already inadequately sized for its current use, RIPTA should address a facility expansion program.

- At the Elmwood Depot, the Service Building - as well as its layout and orientation on the site - present the most problems. The Service Building is clearly undersized and could likely utilize an additional farebox probe/currency vault station as well as one or two additional bus washers. The Service Building's shortcomings appear to impact upon both the operation of the facility and the traffic flow at the Elmwood Depot significantly. RIPTA staff also indicated that the fueling system - which has three dispensers but only one pump - requires upgrading.

- At the Newport Depot, two shortcomings indicated by RIPTA staff were that both the bus washer as well as the steam pressure washer require replacement. Also, similar to the situation at the Elmwood Depot, according to RIPTA staff the fork lift utilized to shuttle equipment around the Newport Depot also requires replacement.

- The Newport Depot would require some investment in its facilities should the number of buses based there increase by any significant amount. This is especially true in terms of the number of repair bays and the ability to provide indoor storage.

- When the function and role of the Unit Shop are considered, the Elmwood Depot appears to be appropriately staffed, while the Newport Depot appears to be understaffed. Although this would - at first glance - appear to imply that additional staff should be hired for the vehicle maintenance function at the Newport Depot, when both the suburban nature of much of this depot's service area and the "satellite" nature of the facility are considered the need for any additional staff is questionable.

- The average age of the RIPTA fixed route bus fleet is 6.5 years, which is slightly older than it should be given the make-up of the fleet. The average age of a revenue fleet should be equal to or less than half the average useful life of the vehicles comprising the fleet, which in RIPTA's case would be 5.8 years.

- Given the issues associated with stocking parts from six different equipment manufacturers, RIPTA's future fleet plans should attempt to minimize the number of vehicle manufacturers.

- The average age of the RIde demand responsive fleet is 4.7 years, which is older than it should be given the make-up of the fleet. The average age of a revenue fleet should be equal to or less than half the average useful life of the vehicles comprising the fleet, which in the RIde service's case would be 2.5 years.

- Both of the depots - as well as RIPTA overall - have spare ratios that are larger than the suggested range. Although the spare ratio is high, RIPTA staff indicated that it has improved over the past few years and is expected to continue to improve. In fact, the peak vehicle requirement is expected to increase with the September 2006 schedule pick. However, once the problem with the Orion buses is solved, RIPTA should develop a bus replacement plan that results in a 20 percent spare ratio.

- The only issue apparent in the disposition of the RIPTA fixed route fleet relates to fuel type. Because of the difficulties involved in fueling the CNG vehicles at the Elmwood Depot and until the CNG fleet is completely phased-out, RIPTA might consider assigning the five CNG powered buses based at the Elmwood Depot to the Newport Depot and moving five of the diesel powered buses based at the Newport Depot back to the Elmwood Depot.

- RIPTA vehicles undergo PM inspections every 3,000 miles. There is a 500-mile "window" on either side of the 3,000-mile interval during which a vehicle may undergo its PM inspection and still be considered to not have "missed" the inspection interval. Only about 72 percent of the PM inspections were completed within this 500-mile "window". The other 28 percent were not completed within this interval, with 13 percent of PM inspections being completed late and 15 percent being completed early. A good performance is considered a 90 percent on-time completion rate, a goal that RIPTA should attempt to meet.

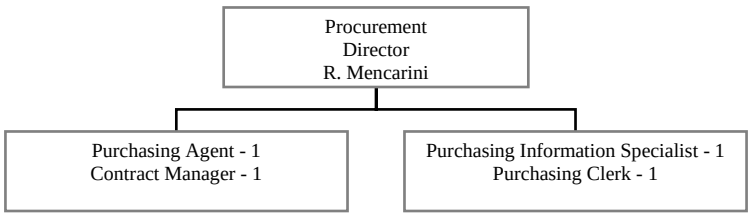
- RIPTA's performance in terms of the average distance between vehicle failures while in service has greatly improved since 2001, hitting a peak in 2003. During the 2004 report year for the NTD, RIPTA was precisely where it should be in terms of the mean distance between major failures, with 5,818 miles between these types of failures. The guideline calls for the rate to fall between 4,000 and 6,000 miles. However, in terms of the mean distance between all failures, RIPTA only had 2,759 miles between all types of failures during the 2004 report year for the NTD. This falls short of the guideline of 3,000 miles between all types of failures. Nonetheless, although there is still opportunity for improvement, the overall improvement since 2001 has an important bearing on the cost effectiveness of the vehicle maintenance function.

PROCUREMENT

Organization and Staffing

The procurement function is headed by the Director of Procurement, who reports directly to the General Manager of RIPTA. This department is responsible for all procurements of materials, spare parts and services for the day to day operation of fixed route bus and paratransit services operated by RIPTA. The organization of this department is shown in Figure 10. The Procurement Department consists of six full-time positions.

Figure 10
Department of Procurement



Policies and Procedures

The day to day activities of the procurement function are guided by the Procurement Standards Manual prepared by RIPTA in August 2005. The procurement policies and procedures described in this manual follow applicable state and federal requirements. All purchases provide for open competition and the approval authority is based on the size of procurement.

Open Competition - RIPTA's policies and procedures provide for full and open competition in ways that are based on the size of the procurement, as follows:

- Small purchases not exceeding $250 (micro purchases): no competitive quotations are required if the prices are considered to be fair and reasonable;
- Small purchases over $250 but less than $5,000: oral or written quotation from a minimum of at least three qualified sources; and
- Purchases in excess of $5,000: require use of competitive bidding procedures.

The policies and procedures allow for use of different types of procurements, such as Invitation for Bid (IFB) or Request for Proposals (RFP), depending on the type of procurement. Further, RIPTA's policies and procedures also recognize unique requirements related procurements for architect/engineering services and specialized equipment and materials.

Approval Authority - RIPTA's policies and procedures establish three levels of approval authority for all procurements. These are as follows:

- up to $10,000: Department Heads;
- up to $50,000: General Manager; and
- over $50,000: Board of Directors

Compliance with Requirements

RIPTA receives funding from both the State of Rhode Island and the Federal Transit Administration (FTA) of the United States Department of Transportation (USDOT). Therefore, RIPTA is required to follow both state and federal procurement requirements. The Procurement Standards Manual referenced above incorporates different local and federal requirements to be followed by the agency. It is based on the FTA Circular 4220.1E, Third Party Contracting Guidelines.

Contract Administration - RIPTA has developed and implemented a contract administration system. It includes various activities, such as contract administrator's responsibilities, project manager's responsibilities, closeout procedures and checklists, amendments, change orders and termination procedures.

Procurement History - RIPTA has developed a file structure that documents the history of all pertinent steps taken during the procurement. It includes the required items, such as the method of procurement, contract type, contractor selection, and the basis for contract price.

Conflict of Interest - RIPTA's procedures incorporate descriptions of both personal and organizational conflict of interest. All public officials and employees are subject to the provisions of Chapter 35-14 of the General Laws of Rhode Island and the regulations by the Rhode Island Ethics Commission.

Selection Procedures - RIPTA's policies include guidelines for evaluating proposals with respect to established requirements as well as criteria to evaluate and compare different proposals received. Evaluation criteria are developed and listed in the RFP. These are generally related to areas of technical expertise, project approach, affirmative action/minority business, and cost and price information.

Protest Procedures - RIPTA's policies include protest procedures. These provide information to the prospective bidders regarding the contents of the protest and the schedule for responding to the protest in a timely manner. RIPTA's Director of Procurement has the responsibility to evaluate the merits of all protests. The General Manager makes the final determination on all appeals or requests for reconsideration.

Disadvantaged Business Enterprise (DBE) Participation - RIPTA's procedures incorporate the requirement for DBE utilization in FTA funded procurements. RIPTA has an FTA approved DBE Program. RIPTA accepts certification of firms either by the Rhode Island Minority Business Program or any local, state or federal agency.

Other Clauses and Requirements - RIPTA includes applicable clauses and requirements in the solicitation documents, IFB or RFP, depending on the nature of the procurement. A review of a sample of IFB and RFP documents indicates that the list of clauses and requirements is customized for each.

In August 2005, the transportation reauthorization bill was passed by the U.S. Congress and signed by the President. This reauthorization is known as the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The Act contains a number of changes to the federal regulations, including changes to the procurement rules, particularly in Buy America. Since RIPTA's Procurement Standards Manual was last revised prior to the passage of SAFETEA-LU, it does not reflect any of these changes.

Parts Availability, Consumption Rate and Reorder Points

RIPTA's inventory consists of bus spare parts, repairable components, fuel, supplies and various items required to keep its revenue and non-revenue fleet in safe and reliable operating condition. The current inventory consists of over 7,800 "stock keeping units" with an estimated investment of $2.25 million as of April 2006. In addition, RIPTA has approximately $50,000 of fuel for the fixed route bus and paratransit services.

A five-year trend of parts and fuel usage rate is presented in Table 22. As illustrated in this table, RIPTA's usage of parts for the fixed route bus fleet increased substantially beginning in FY 2004. This is due to the implementation of a heavy maintenance and overhaul program in mid FY 2004. RIPTA's total inventory turnover in FY 2006 is estimated to be 1.47.

The inventory is stored at two locations, Elmwood and Newport. The Elmwood location, larger of the two locations, is both central storehouse and a local stockroom for the vehicle maintenance activities. The Newport facility is a satellite stockroom and supports local vehicle maintenance activities at that location. RIPTA uses an automated system to track and manage inventory in the Elmwood storeroom.

The responsibility to manage the staffing and day-to-day functioning of the central storeroom at Elmwood and the satellite stockroom in Newport is shared by three organization units in RIPTA, Inventory Control, Maintenance and Procurement.

- **Inventory Control -** is responsible for monitoring inventory procedures, status of inventory levels, and resolving parts availability issues. Inventory Control is in the Operations Department but, due to a vacancy, currently reports to the Maintenance Department.

- **Maintenance -** is responsible for the operation of the stockroom in Elmwood. This stockroom is open 24 hours a day Monday to Friday and 8:00 am to 4:00 pm Saturday and Sunday. A foreman in the Maintenance Department assumes responsibility when the stockroom personnel are not available. The Newport stockroom is under direct control of the Maintenance Foreman. This foreman requests transfer from Elmwood to replenish stock, enters parts issued in the computer, and oversees the operation of the stockroom.

Table 22
Parts Usage and Fuel Consumption Trends

	FY2002	FY 2003	FY 2004	FY 2005	YTD FY 2006 (c)
Motor Bus (a)					
Parts Usage	$1,318,164	$1,374,515	$2,084,067	$2,586,213	$2,448,276
Fuel Consumed ($)	$1,816,331	$2,090,014	$2,656,627	$3,545,715	$3,825,561
Fuel Consumed (gallons)	1,911,927	1,833,346	2,088,683	2,026,123	1,685,269
Active Fleet	263	251	237	235	258
Total Vehicle Miles	8,977,829	8,723,658	9,021,988	9,189,406	7,740,761
Parts Used per Active Vehicle	$5,012	$5,476	$8,794	$11,005	$9,489
Parts Used per 1,000 Vehicle Miles	$147	$158	$231	$281	$316
Annual Inventory Turnover					1.47 (d)
Job Orders Filled					100% (e)
Fuel Cost per Gallon	$0.95	$1.14	$1.27	$1.75	$2.27
Fuel Consumption Rate or Vehicle Miles per Gallon	4.70	4.76	4.32	4.54	4.59
Paratransit (b)					
Parts Usage (DO+PT)			$391,099	$402,203	$313,707
Fuel Consumed ($) (DO)			$449,155	$632,096	$701,235
Fuel Consumed (gallons) (DO)			353,666	361,198	391,960
Active Fleet (DO+PT)			135	135	132
Total Vehicle Miles (DO+PT)			4,291,298	4,269,104	3,447,731
Total Vehicle Miles (DO)			3,402,925	3,411,809	2,858,272
Parts Used per Active Vehicle (DO+PT)			$2,897	$2,979	$2,377
Parts Used per 1,000 Vehicle Miles (DO+PT)			$91	$94	$91
Annual Inventory Turnover					1.47 (d)
Job Orders Filled					100% (e)
Fuel Cost per Gallon (DO)			$1.27	$1.75	$1.79
Fuel Consumption Rate or Vehicle Miles per Gallon (DO)			9.62	9.45	7.29

(a)RIPTA began a heavy scheduled maintenance and overhaul program in mid FY 2004.
(b)RIPTA began a centralized paratransit maintenance program in FY 2004 for Directly Operated (DO) and Purchased Transportation (PT) services
(c) 7/1/05 to 4/30/06
(d) Estimated based on actual parts usage rate for 7/1/05 to 4/30/06
(e) Based on all job orders filled during a sample week of 4/23/06 to 4/29/06

- **Procurement -** is responsible for monitoring stock levels and replenishing Elmwood stockroom. Procurement is responsible for entering new inventory transactions in the computer, maintaining and updating inventory files, and transfer of parts between stockrooms.

RIPTA uses an automated system to monitor consumption rates and availability of parts in the Elmwood stockroom. This system monitors parts availability based on min/max method. The minimum and maximum quantities for each part in the inventory are determined when an item is first added to the inventory. The automated system flags the items that have reached the minimum levels and purchase orders are generated to replenish the levels in the Elmwood stockroom. When necessary the automated system is overridden and parts are ordered on request. This usually happens when there is a need to respond to specific maintenance campaigns. RIPTA staff indicated that due to recent budget constraints, parts are being restocked at a lower rate than the maximum historical rates and in some cases parts are permitted to go out-of-stock.

RIPTA has developed and implemented a procedure to respond to parts out-of-stock, particularly if such an event results in bus unavailability for service. When a part needed for repairing a bus is not available, it is noted on the open Job Order and a Part Shortage Slip is generated. Purchasing of such an out-of-stock part is expedited by the Procurement Office. When the needed parts arrive in the stockroom an e-mail notification is sent to the Maintenance Department, who in turn directs the foreman to proceed with the repair activity on the open Job Order awaiting the parts.

An examination of the inventory parts status list as of March 6, 2006 indicates that RIPTA was out-of-stock or below the required minimum quantities on some parts. During the week of April 23 – 29, 2006, RIPTA opened a total of 631 maintenance job orders. No job orders remained open during this week due to lack of availability of parts in the storeroom. RIPTA staff indicated that no service is lost due to unavailability of parts. RIPTA has sufficient number of spare buses to respond to occasional parts out-of-stock.

Warranty Administration

The Warranty Manager is responsible for administering warranty provisions for all parts and equipment purchases by RIPTA. The Warranty Manager reports to the Director of Maintenance. The Warranty Manager works with the suppliers and maintenance personnel to identify and resolve warranty related issues. The Purchasing Department is responsible for recovery of warranty related cost incurred by RIPTA.

Conclusions and Recommendations - RIPTA's written procurement policies and procedures, and stockroom activities were examined during this audit. This audit found that RIPTA has adequately documented its procurement policies and procedures. Furthermore, RIPTA's policies and procedures are in compliance with the competitive procurement requirements of the funding agencies, particularly FTA. However, with the passage of SAFETEA-LU a number of federal requirements will change, particularly in Buy America. RIPTA's current policies and procedures do not address these changes.

Though the responsibility for the day-today operation of various stockroom functions is distributed among three departments, Operations, Maintenance and Procurement, all activities appear to be well coordinated and are being carried out effectively. No fixed route bus or paratransit service has been lost due to lack of parts.

While the Authority appears to be managing the availability of its parts, there are concerns related to the current system. Although RIPTA has not experienced any missed service due to parts shortages, its current system of allowing parts to go out-of-stock before re-ordering and not re-ordering at maximum levels is not consistent with its formal procedures (i.e., current practice does not match documented procedures).

The following recommendations are offered to address the issues related to RIPTA's Procurement Standards Manual and concerns related to its parts ordering practices.

- RIPTA should update its Procurement Standards Manual to address any changes to federal requirements;

- RIPTA needs to continue to monitor the out-of-stock list of parts and its impact on bus availability to ensure that service levels are maintained; and

- RIPTA needs to reexamine minimum and maximum order levels and rebalance the consumption rates to be consistent with current practice. In doing so, RIPTA also may be able to reduce the current investment level of $2.25 million and increase the rate of annual inventory turnover.

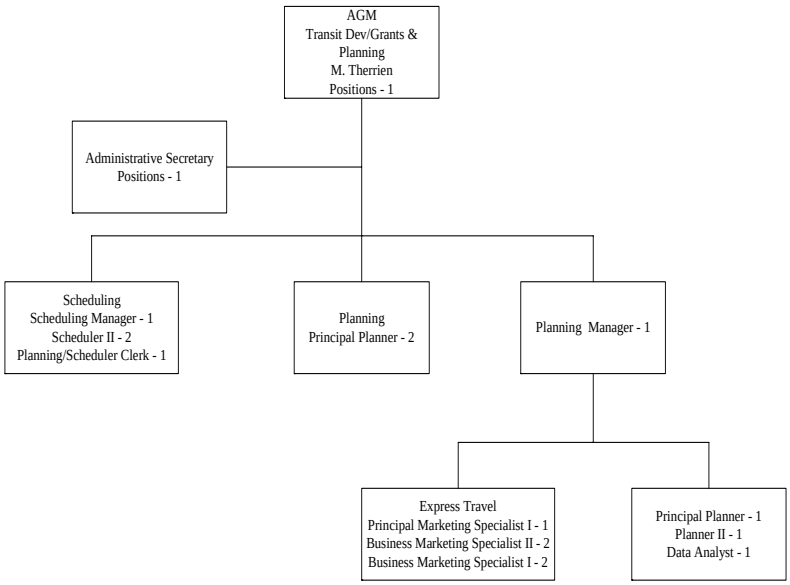
TRANSIT SYSTEM DEVELOPMENT/GRANTS & PLANNING

As the name implies, this department is responsible for planning activities related to monitoring the performance of the existing bus system and formulating proposals for the future. Many of RIPTA's external contacts are through this department that also handles grants since RIPTA is the designated recipient for the Federal Transit Administration. The department also has responsibility for scheduling which develops drivers' assignments. While not directly related to its primary mission, the department's duties also include Express Travel. This function is aimed at shared ride programs (e.g., carpools) and activities to encourage transit ridership. While the program is administered within the department, it is not analyzed in this chapter which focuses on planning and scheduling.

Organization and Staffing

The department is headed by an Assistant General Manager who reports directly to the General Manager and is viewed as part of the senior management team. The unit consists of 16 full-time positions which are organized into three groups – Schedules, Planning and Express Travel with the latter reporting to the individual in charge of Planning, as shown in Figure 11. With the exception of two positions, all employees are covered by a collective bargaining agreement and represented by Local 808. The Secretary position is currently vacant.

Figure 11
Department of Transit System Development/Grants & Planning



The Schedules group has four employees that consist of a Supervisor, two Scheduler II positions and a Planning/Scheduler Clerk. The group performs four – headway determination, headway tables, vehicle assignments (i.e., blocks) and driver assignments (i.e., runs) – of the five steps associated with the scheduling activity. They perform this activity for the Elmwood and Newport garages for weekday, Saturday and Sunday service for each of the three driver picks. Other responsibilities include schedule preparation for special events. The fifth scheduling step is rostering, that at RIPTA entails turning 7 days of work into 5-day packages to match 5 day contracted work week. Specifying the number of drivers to meet scheduled service is the responsibility of the Director of Transportation.

The Planning Group has six employees with a Manager, three Principal Planners, a Senior Planner and one Data Analyst. The Manager serves as the deputy to the Assistant General Manager. Each of the Principal Planners is assigned a specific area in which they concentrate their activities. One focuses her efforts on human and paratransit transportation services as well as security issues. Another is the lead person for federal regulation compliance, capital planning and RTAP. The third Principal Planner devotes his time primarily to service planning for the bus system. In a small organization, there is flexibility in that individuals can be assigned to specific tasks as the need arises.

The Express Travel unit has four positions and this group reports to the Planning Manager. Previously, Express Travel had a manager and this person reported directly to the Assistant General Manager. Two additional points are worth noting regarding the organization structure of Transit System Development/Grants & Planning. The first is that the Schedules group was within the Transportation Department several years ago. Many transit systems have the current RIPTA organization where scheduling and planning are within the same unit. It permits coordination between the formulation of proposals and the necessary steps to see service operated on the street. This current arrangement seems to work well and sufficient interface is maintained with operating personnel. The second point regarding organization is that the group does not have a team of transit checkers who conduct surveys, counts and other field observations on an as needed basis. Reliance is placed on scheduling and planning staff which is supplemented by input from operating personnel and automated techniques.

Goals and Objectives

The Department does not have a specific mission statement or goals and objectives related to planning and scheduling. Instead, staff has an informal understanding of what they should achieve. For scheduling, this includes developing daily driver assignments (i.e. runs) that are compatible with the labor agreement and results in efficient use of drivers and a convenient service to patrons. Planning has recognized the need to update and revise the bus system and has made changes to most routes over the past few years. In addition, the Department is the primary contact with external organizations that includes other government agencies (e.g., RIDOT, FTA and municipalities) and private developers.

Planning

The planning unit is the largest group within the department, particularly since the Express Travel staff reports to the Planning Manager. The unit is also important since it establishes where, when and how service is to be provided. Planning efforts are directed to the development of service plans for a short range planning horizon which includes the allocation of finite transit resources. The proposals are consistent with the overall funding levels. RIPTA does not have a three to five year transit plan. Instead, staff has set out to revise routes in an incremental fashion and estimates that during the past two years they have made changes to 85 percent of the system. The remaining 15 percent of the routes will be analyzed and revised during the next year or two. Much of the effort has been directed at reallocation of existing resources to improve service to customers and increase effectiveness.

RIPTA has not undertaken its own analysis of more capital intensive plans, such as Bus Rapid Transit or Light Rail, for a more distant horizon period. The only major capital project is the extension of rail service from Boston to Warwick with connecting service to Greene Airport. This project is being directed by RIDOT with RIPTA staff providing input and comment.

Service is oriented to Downtown Providence with service originating /terminating at Kennedy Plaza. The transit facility at Kennedy Plaza is not sufficiently large to accommodate current bus volumes. For this reason, buses are not permitted to layover more than four minutes so other buses can use the facility. This has far reaching consequences since it limits the ability to permit timed transfers and restricts the provision of layover at both ends of the route. Other core areas also have bus service, but to a far lesser extent than Providence. A novel service concept is the flex routes that provide demand responsive service within certain areas and connections to bus routes for travel outside the flex service area.

Another feature of the current bus system is that priority is placed on efficiency to the detriment of "user friendly" aspects. Some transit systems have opted for clockface and recurring headways (i.e., interval between buses in minutes); for example, where the bus arrives on the hour, 15 minutes after the hour, 30 minutes after the hour and 45 minutes after the hour. This arrangement makes it easier for riders to utilize the system, particularly potential riders who may be intimidated by a complicated timetable. RIPTA's approach is to maximize service to riders since the clockface headways typically mandate greater layovers which results in less frequent service or the need to have additional buses in service. As noted above, the capacity constraints at Kennedy Plaza restrict the opportunities for schedule coordination in downtown Providence.

Relationships - Internal coordination between planning and scheduling is readily achieved since they are in the same department. The group chairs the Service Development Committee which considers service changes related to each schedule change. It includes Planning staff meeting with operating personnel to obtain their input and comments. Meetings are held about every two months and include drivers, supervisors, dispatchers, garage superintendents and others such as safety personnel as the need arises. It has also proven a constructive way to keep drivers informed on the status of their suggestions.

Other contacts are with finance staff who provide various cost and revenue statistics. For example, planning uses a cost model to perform their route evaluation and the unit cost factors are provided by the Finance Department. Liaison is with other departments such as marketing, safety and IT when the need arises. It would appear that the relationship with other agencies within RIPTA is constructive and works well to obtain input to the planning activities. Another point to note is the individual responsible for service development is an active participant in the planning process. Further, he is an Assistant General Manager and part of RIPTA's senior management team.

The group has responsibility for contacts with outside organizations including other government agencies and private firms. Contacts are maintained with municipalities and counties to learn about road projects and any planned detours. Other information relates to planned development in each community and its implication on RIPTA service. In a similar vain, staff try and keep current on proposed development and check with builders as to their plans and its relationship to the public transportation system.

Frequents contacts are maintained with state officials in a number of areas. For example, highway projects sponsored by RIDOT and any planned detours are catalogued for their impacts on RIPTA bus routes. As noted previously, RIDOT is directing the rail analysis with RIPTA planning staff providing review and comment as necessary. This major capital project is unique in that it involves public transportation, but is not controlled by RIPTA.

Similarly, the Planning group is the lead for contacts with the MPO and the Federal Transit Administration. This includes compliance with federal regulations and preparation of grants. The group provides RIPTA's input to the TIP and assists in the FTA Tri-Annual reviews. The TIP responsibility includes presenting both an operating and capital budget with identified funding sources. This is consistent with RIPTA being the designated recipient for federal transit dollars.

Inputs - The planning function at RIPTA is oriented to the primary goals of achieving cost effectiveness and assuring compliance with the budget and prevailing fiscal environment. At the same time, the planning group tries to balance these constraints with the desire to improve service to both current riders and attract new patrons. As noted before, the planning activity is short range in scope and geared to fine-tuning and adjustment of the current system by reallocating existing resources.

There is no specific mission statement or associated goals and objectives that could guide the planning activity. RIPTA does have a set of service standards that it utilizes for guidance in assessing current service and formulating proposals for the future. The standards consist of more than a dozen criteria that are grouped in several categories – availability, service level, patron convenience, fiscal condition and passenger comfort. Three comments are appropriate regarding the service standards from the perspective of planning. First, they do include guidelines that influence service decisions such as coverage related to density or major generators, frequency of service by operating period, span of service by day and load factor to cite a few. Second, they can be applied both to individual bus lines as well as the entire system.

Third, route level performance does include financial and productivity indices which are well suited to monitoring both system and individual route performance at RIPTA.

Other inputs to the planning process include customer complaints, which are responded to and recorded for input to the planning process. Drivers, dispatchers and supervisors also provide information and suggestions on problems and possible improvements. For the most part, they relate to operational issues; however, they also provide comments other than those that relate to planning and scheduling issues. The Service Development Committee is a formal process to receive these comments and suggestions on service.

The extent of quantitative information is relatively limited with reliance placed on information from the registering fareboxes and a limited number of Automatic Passenger Counters (APC's). Manual ride checks, corner counts or other data collection techniques are typically not performed except in isolated instances to respond to a specific problem or concern. Some transit systems routinely perform these data collection efforts on a continuing basis where the system is surveyed quarterly or annually. RIPTA has conducted a systemwide origin-destination survey at intervals of several years that is consistent with transit industry practice.

Comprehensive count information is limited to the registering fareboxes which track boardings by fare category and individual bus trip. This information is stored in the farebox, which is probed daily, and various programs are available to tabulate and summarize the boarding information by route and time of day. The data from this process is used to compute passengers per hour, which is an important performance measure. It is the only data source that is readily available and comprehensive in that it covers the entire RIPTA system and all vehicle trips. Two concerns regarding this information relate to the nature of the data and its accuracy. First, it only can be used to accumulate boardings and does not provide information where customers board and alight as well as the load (i.e., passengers on-board) at any give location. Second, staff has expressed some reservations about the accuracy of this information since some drivers may not follow instructions.

RIPTA currently utilizes APC's to provide ride check information. With this process, passengers on and offs by location and time of day are recorded. This enables planners to understand service utilization on a geographical basis. Also, the information can be used to gauge productivity by segment and operating period. Other information computed is loading that can be used to gauge overcrowding or underutilization as well as schedule adherence and on-time performance. The benefit of the APC's are that they do not require on-board observers that is time consuming and costly. Further, the vehicle hardware is part of an overall system that includes software that provides various reports which avoids manual data entry and provides information that can be readily analyzed and manipulated.

Unfortunately, RIPTA has only ten buses equipped with the APC equipment. This is not sufficient to obtain comprehensive information on the entire system. Buses must be rotated throughout the system to obtain information on a specific route or time period. Some systems have opted for APC equipped vehicles on about 10 or 15 percent of their peak vehicle requirements. This results in the need for more than twice or three times the number of buses with this technology.

The higher number of buses would allow RIPTA staff to obtain far more information and simplify the operations difficulty of deploying the buses to specific runs.

Because of the relatively low cost of installing the APC equipment relative to the purchase price of buses, many transit systems require all new buses to be APC equipped. It enables several routes in a corridor to be surveyed simultaneously. Further, data can be obtained on seasonal and daily variations with the data archived for later retrieval and analysis.

The discussion above describes various ways to accumulate information on current riders. Two points are worth noting in this regard. First, there is the need for a data management plan to indicate how greater reliance on APC's could be used and what surveys and counts should be performed and the resulting manipulation and outputs. Second, these results only provide information on current customers and provide no information on potential riders. Since the majority of trips within the metropolitan area are not by public transportation, there is a need to gauge the extent of latent demand. This could include information on development projects through various disaggregate statistical summaries of population, employment, retail floor space and other similar measures of activity.

As noted previously, Planning staff try to stay abreast of developments and activities throughout the service area. Currently, RIPTA is increasing its capabilities in Graphical Information Systems (GIS) that can portray route information and various demographic statistics as a series of overlays. Previously, RIPTA relied upon Statewide Planning for this expertise. The intention is to utilize the ArcView software and become self-sufficient in this technical area. In this way, the results of U.S. Census information on characteristics of the population and journey to work travel data along with other geographical information can be more fully utilized. Many transit systems have found GIS a useful tool to gauge compliance with Title VI.

Reporting - As part of its planning activities, staff prepares a number of reports on a routine basis. Other documents are also prepared in response to specific issues. RIPTA assesses individual route performance utilizing a composite scoring system. Four factors are considered and include: passengers per bus trip, passengers per vehicle mile, passengers per vehicle hour and farebox recovery. The last term is the ratio of fares paid by riders to the operating cost of each bus line. RIPTA uses a three-variable cost model to estimate the cost of each bus route. The composite score is well suited to monitoring route level performance since it includes both productivity and financial measures.

With the RIPTA approach, each route of the 52 bus routes are ranked from best (i.e., 1) to worst (i.e., 52) and with all four measures, higher values are indicative of better performance. The ranks for each route are summed and then this composite score used to rank the routes. These results are used to direct planning efforts to those routes that are poorly performing or where opportunities for improvement are possible.

Staff prepares numerous illustrations and charts that present the route level performance. Much of the information presented included ridership data by segment from the APC counts. Others include information from the registering fareboxes. The sample reports reviewed as part of this analysis suggest a quantitative approach to system monitoring and service planning.

Considerable information is obtained and analyzed to assess performance and suggest service improvements.

As noted previously, staff is called upon to prepare specific analyses such as a data summary of ferry ridership and a student transportation survey at Salve Regina University. Staff has also prepared a draft document that delineates a Bus Rapid Transit Initiative.

Conclusions and Recommendations - Planning at RIPTA is performed in a competent and professional manner. The process includes service standards and is quantitative and relies on various measures to assess route and system performance. For many activities, the group serves as the RIPTA representative with other transportation agencies such as RIDOT and the MPO. Another attribute of service planning is that it is oriented to small scale, near term actions related to the bus system, rather than major changes in bus service and capital intensive projects with relatively lengthy lead times. Specific proposals to improve the service planning function at RIPTA are briefly summarized below:

- Staff is to be complimented for its use of a numerical process to assess individual route performance. Many transit systems either perform no statistical review of individual route performance or rely on a single measure. RIPTA's process incorporates both productivity and financial measures. Further, the use of a three variable cost model is a positive feature of the analysis. One suggestion is that other measures be considered for inclusion in the process. This could include criteria such a cost per passenger and deficit per passenger as well as each route's contribution to the system deficit. Since RIPTA compiles key operating, ridership and financial information, this could be readily accomplished.

- Another positive attribute of planning, RIPTA has a set of service standards that is another way to monitor performance. Since the standards are more than ten years old, consideration should be given to updating them in light of recent conditions. Also, a formal report should be prepared at least annually to assess RIPTA performance relative to the standards. This may require expanded data collection capabilities, particularly if the compliance with standards report is prepared more frequently than annually.

- The current staff organization appears appropriate to support both internal activities and liaison with external agencies. Suggestions would include cross training and greater capabilities in various technical areas such as GIS software.

- Plans should be made to expand the number of vehicles equipped with Automatic Passenger Counters. Many systems have opted for about 10 to 15 percent of all buses to have this capability. Because of the increased affordability of this technology, some transit agencies have decided to equip all new buses. Clearly, the current capabilities are not adequate.

- Related to the previous proposal, RIPTA should prepare a data management plan that indicates how various manual and automatic approaches will be integrated to provide the necessary data collection. It would include a more formal description of socioeconomic and development information along with travel information within the service area and not merely transit patrons.

- Most of the discussion above relates to short range planning that deals with the system in terms of improvements that have a one or two year horizon period. For example, the plan to revise the current system incrementally has spanned a few years that reflect the limitations of staff time. Also, much of the planning is related to reallocating limited transit resources. It would be appropriate for RIPTA to prepare a longer-term positive vision of what transit can be. Accordingly, a 3 to 5 year transit development program should be prepared that describes options that range from continuation of current service levels through various increments of system expansion. Other issues to be explored would be the overall system configuration from primarily radial to a multi-nucleated arrangement. The impacts of each of these scenarios in terms of their costs and benefits could be contrasted. In this way, planning activities would be both tactical and strategic in terms of its content.

- While other units within RIPTA are consulted to solicit their comments on service changes, it is suggested that greater input be sought from passengers. This would include "walk-up" sessions at major boarding locations (e.g., Kennedy Plaza) to gain riders' thoughts on service improvements.

- Kennedy Plaza serves as a constraint on the volume of buses and the ability to provide timed-transfers. An examination should be undertaken to increase the capacity of downtown transit facilities. This could include modifications to existing as well as new facilities.

- In view of the favorable rating achieved by planning, consideration should be given to an expanded role to service as in-house consultant on a variety of technical issues as they arise. Many transit agencies have individuals or a group that is oriented to achieving greater efficiency and effectiveness. For example, a statistical analysis of extraboard and overtime could be a worthy area of investigation.

The recommendations are aimed at enhancing a planning process and program that appears to work well. The changes above should provide more useful information and broaden the planning horizon period.

Scheduling

Since drivers' wages and fringe benefits historically accounted for a significant portion of all operating costs, scheduling has a substantial impact on transit expenditures. Small improvements in scheduling efficiency can produce substantial cost savings. Further, the scheduling process also influences the attractiveness of service in terms of convenience and

reliability. Scheduling also has the responsibility for insuring that accurate schedule information is presented in timetable and web page displays.

This section describes scheduling in terms of its relationships within the department and other units of RIPTA, inputs and outputs of the process and the individual steps that comprise the schedule building process. Next, specific proposals are made to improve the performance of this activity within the Service Development/Grants & Planning Department.

Relationships - Since both planning and scheduling are within the same group, these efforts are well coordinated. Operations planning considerations are easily incorporated into the scheduling process. Conversely, scheduling issues are understood by planning staff as they monitor performance and formulate proposals. The planning group maintains contacts with external agencies and tracks detours and other changes to the roadway system. The Service Development Committee provides a mechanism to obtain comments from operating personnel. Also, the informal relationship between the various individuals assures that potential problem areas or suggestions are conveyed to staff responsible for scheduling.

Inputs - Both policy guidelines and quantitative data are key ingredients to the schedule building process. The former reflects service standards while the latter includes data on the existing system that was described as part of the planning process. Considerable use is made of the APC generated information, although it is a limited sample. The purchase of more APCs and the introduction of Automatic Vehicle Locators (AVL) would provide a comprehensive data base on running times and on-time performance. The rider survey conducted last year provided a basis for interlining some routes.

Currently, the scheduling unit relies on the service standards to establish an acceptable load factor at 150 percent. Service specifications related to frequency and span are provided by the planning group. Other inputs relate to layover at Kennedy Plaza that is limited to no more than four minutes. Also, prior management dictates as to appropriate layover at the outer terminals along with labor confrontations, rather than only technical considerations influence the scheduling process.

For this reason, the amount of layover was examined for the schedule and driver assignments for Winter 2006. Typically, transit agencies attempt to provide layover at both terminals of a bus route. In some case, this cannot be accommodated because of insufficient space in downtown. Under these circumstances, transit systems provide layover at only the outer terminal. For RIPTA, buses can park at Kennedy Plaza in downtown Providence, but because of space and capacity limitations can only stay no more than four minutes. Since drivers are with the vehicle to permit boarding and alighting, the four minutes is not layover in the normal way the term is used in the transit industry. While it does permit some recovery from delay, it does not provide a break for the driver between revenue trips. It is used to allow buses that arrive late at a terminal to leave on time for the next trip.

Typical layover values are between 10 and 15 percent of running time, but may go higher for unusual circumstances such as unpredictable traffic delays. Using statistics generated by RIPTA for weekday schedules by route reveals a layover percentage of 19.5 percent that is high. Further, many routes have values that exceed the system average.

The results clearly indicate that layover times are excessive and could be substantially reduced and still afford adequate rest periods for drivers and recovery from service delays. A review of individual driver assignments and routes confirms the high layover values. Since the bus is not in revenue service, this represents unproductive and inefficient utilization of drivers.

Another issue related to the scheduling function is the time needed to proceed from a service plan to the actual runs that can be posted for the drivers' "pick". Staff estimates that three months is required which appears to be a reasonable duration. For each pick, scheduling prepares dates when various activities are to be initiated and completed. Often last minute changes require "patches" which are usually more costly to operate. Based on discussions with staff, this does happen at RIPTA, and it appears more widespread than it should be. To an extent, the negative consequences of these changes are offset by the reliance and capability of the scheduling unit with the software package as well as their knowledge of the system and labor provisions. Nonetheless, greater efforts to educate others as to the consequences of last minute changes should be expanded.

Reporting - As noted above, reliance is placed on the scheduling software to generate various outputs from the scheduling process. Numerous statistics are generated which are useful. To assess the reasonableness and efficiency of the runcut, the scheduling unit examines global statistics as well as looks at individual driver runs with high total pay. The examination considers the types of runs generated and the different categories of pay hours by service day. It should be recognized that these results are also influenced by the nature of service (i.e., peak/base ratio and span) and terms of the labor agreement (e.g., spread premium and percent part-time operators).

Since separate driver assignments are made for three service days – weekday, Saturday and Sunday, the scheduling process needs to be assessed for each service day. At RIPTA, this situation is further complicated since separate runcuts are prepared for each garage – Elmwood and Newport. The scheduling staff examines the drivers' runs in terms of those with high pay hours and the number of runs. The most frequently used index in the transit industry to assess the efficiency of a runcut is the Pay/Platform Hour Ratio (PPR).

Platform hours are the time spent by drivers operating the vehicle and include deadheading (between garage and beginning and end of service when bus is not available to riders), time spent operating along the bus route, including layover. As the name implies, pay hours is the equivalent straight hours that will be paid to drivers. It includes platform time as well as provisions such as report, overtime and spread premiums.

The scheduling software generates the reciprocal (Platform/Pay Hour Percentage) that can also be used to gauge scheduling efficiency. Staff does not use the PPR or the percentage values to any great extent.

Results were obtained for the schedule that was in place in September 2005 and January 2006. The computer software generates statistics on platform and pay hours by day of the week and garage. These results are presented in Table 23.

Table 23
Pay/Platform Hour Ratio

Service Day	Elmwood	Newport	Combined
September 2005			
Weekday	1.096	1.162	1.104
Saturday	1.083	1.097	1.084
Sunday	1.099	1.154	1.102
Week	1.095	1.156	1.102
January 2006			
Weekday	1.133	1.139	1.134
Saturday	1.089	1.093	1.089
Sunday	1.104	1.154	1.106
Week	1.127	1.135	1.128

Typically, values in the range of 1.07 to 1.15 are viewed as acceptable, although there are no standards in the transit industry. In some cases, the PPR value gauges the terms of the contract as much as the ability of the scheduler to achieve cost efficiency. As might be expected, the values for weekends are less than on weekdays since the service is less peaked and there are more straight runs and fewer split runs with various pay provisions. The results for RIPTA are at the higher end of this acceptable range. Of concern are the results for Newport that are considerably higher than those observed for Elmwood. Also, there was an increase in PPR and decline in cost efficiency between the two periods.

These results would suggest the need to more carefully examine the PPR values as part of the scheduling process. Another reason for this performance is the assignment of trippers at overtime. Trippers are short duration assignments that are assigned to drivers as part of the pick process. Since they represent additional work beyond the normal day, they are operated at overtime rates (i.e., time and one-half). In some systems, they are not assigned as part of the scheduling process. Instead, they are treated as "open work" which is assigned by the dispatcher each day to the extraboard or spare drivers. If there are not a sufficient pool of spare drivers, they could be assigned to regular drivers on their day off. This is an area that should be explored by staff so that they can quantify the cost implications of a different approach to the trippers.

The discussion above relates to the PPR value from the scheduling process for each service day. An ultimate value reflects the actual pay hour for each of the categories. Differences reflect payments such as unscheduled overtime, drivers working on their day off and utilization of the extraboard. To illustrate the relative disparity between the two values (i.e., scheduled and ultimate), a sample of two one-week pay periods were examined. The scheduled pay hours for each one-week period was computed from the information presented above for five weekdays, one Saturday and one Sunday. The process was performed for one week in September 2005 and another week in January 2006.

The ultimate PPR value was computed utilizing payroll information for each one week that includes hours of pay and the amount. Overtime hours were converted to equivalent straight pay hours since they are paid at 1.5 or 2.0 times the base hourly wage. Similarly, spread remium was computed at half the hourly rate. The pay hour comparisons for both one-week periods are shown in Table 24.

Table 24
Schedule and Payroll Pay Hours

	Elmwood	Newport	Combined
September 2005			
Payroll	14,228.12	1,989.07	16,217.18
Schedule	11,989.23	1,778.59	13,760.82
Percent Difference	18.7	11.8	17.9
Schedule PPR	1.095	1.156	1.102
Ultimate PPR	1.300	1.292	1.299
January 2006			
Payroll	13,710.91	1,812.79	15,523.70
Schedule	12,359.75	1,696.45	14,056.21
Percent Difference	10.9	6.9	10.4
Schedule PPR	1.127	1.135	1.128
Ultimate PPR	1.250	1.213	1.245

The results in January are better than those shown for September 2005. While these are sample two week periods, they do reveal a wide disparity between schedule and ultimate PPR values. This would result in an ultimate PPR value considerably greater than that presented previously based on the scheduling process alone. These results would suggest the need to monitor both the scheduled and the ultimate PPR values which are not currently indices that are being monitored.

Scheduling Steps - Each of the scheduling steps were examined and relevant comments made as appropriate.

- **Headway Determination** - To a great extent, determination of headways rely on knowledge of the system, past policies, experiences with overcrowding and responding to comments of riders, drivers and supervisors. The step could benefit with development of a comprehensive data base on ridership that could be achieved with more buses equipped with APC technology.

- **Headway Table** - There is a need for quantitative information on running times, rather than limited data from the APCs and responding to complaints and concerns. This is an area that could benefit from technology which could include more APC equipped buses and installation of an Automatic Vehicle Locator (AVL) system.

- **Vehicle Assignment (Blocking)** - The next step in the process is the specification of blocks or vehicle assignments that incorporate acceptable layover/recovery times. As noted previously, layover times are excessive and should be reduced which can improve cost efficiency. Another consideration is the limitations of Kennedy Plaza.

- **Driver Assignment (Run Cutting)** - Many of the comments made previously regarding the PPR values are appropriate in this step. Benefits could be achieved by monitoring the scheduled and ultimate pay/platform ratios on an ongoing and continuous basis. As part of this effort, trippers are bid assigned to drivers at overtime. There is no open work which would normally be handled by the dispatcher on a daily basis and assigned to extraboard or part-time drivers..

- **Rostering** - The concluding step of the scheduling process is to assign each full-time driver five consecutive daily assignments during the week. In Elmwood, the five daily assignments are specified along with their days off. In Newport, a "cafeteria" approach is employed where the drivers pick the five days of work that they want. The extraboard requirement that is established to cover absences is not part of the scheduling process. The size of the extraboard is established by operations personnel. If the extraboard is too high, drivers are paid and there isn't sufficient work to keep them busy. However, the guarantee requires them to be paid eight hours daily and 40 hours per week. If the extraboard is set too low, then drivers must be called in on their day off at overtime to meet service requirements. The scheduling unit has no involvement in the rostering process.

The discussion above summarizes the scheduling process and key features of the activities performed by the scheduling unit. As noted above, the new service plan and the need for timed-transfers increases the difficulty of the schedule building process.

Computerized Process - RIPTA utilizes the HASTUS software and personnel are well versed in its capabilities and use. The vendor is under contract to provide technical assistance on an as needed basis. The software has proven a useful tool and has reduced the staff needed to perform the scheduling process. The programs are capable of generating a wide range of reports throughout the process. Also, the computer is able to obtain a more cost efficient schedule than with manual procedures alone. Staff estimates that 90 percent of the scheduling process is automated with ten percent requiring manual adjustments. This is not an uncommon experience at other transit agencies. The interface with the payroll program and the production of timetables works well.

Staff primarily utilizes HASTUS for production runs of the scheduling process. It has also been used as an analytical tool to assess the consequences of different labor provisions and scheduling approaches.

Conclusions and Recommendations - The scheduling function is performed in a competent and professional manner. These results reflect the coordination of planning and scheduling, knowledge of the system and capabilities in utilizing the scheduling software. While the overall review is favorable, it does suggest opportunities for further improvement which are summarized below:

- The scheduling function is influenced by both policy and technical considerations. Policy guidelines include criteria such as frequency, span, loading and schedule coordination. The service standards should be updated and include all elements that are needed by the scheduler to assure that policy guidelines are met.

- The Scheduler lacks the necessary information to perform the scheduling activity. A comprehensive data collection program should be developed and carried out in a routine and continuing manner. As with the proposal above, implementation of this recommendation would support both planning and scheduling activities. The current scheduling is reactive to comments, problems and complaints. The scheduling function should rely on quantitative information such as ridership, running times and on-time performance statistics. This could be achieved by greater reliance on APC's and introduction of an AVL systems.

- One specific element of the data collection activities is the farebox readings. Concerns regarding accuracy of this information at a detailed level should result in additional training and awareness of drivers as well as appropriate incentives/disincentives for operating the farebox properly.

- Pay/platform ratio should be used to monitor the scheduling efficiency. The PPR value should include all pay components and be determined for each service day and garage. While the values are acceptable, they are at the higher end of the range. The PPR values for Newport are higher than for Elmwood and suggest greater scrutiny. In addition to the scheduled results, an ultimate value that relates actual pay hours to platform hours should be monitored. Acceptable thresholds should be established and serve as a benchmark for gauging scheduling efficiency. This analysis has demonstrated how this computation should be made and the need to monitor absenteeism and extraboard utilization.

- Layover times should be reduced and staff efforts should be directed at documenting schedule adherence and the variability of running times. Reflecting available data and staff time, the layover reductions should be made in an incremental basis. It is recognized that this is an area of potential conflict with drivers, but RIPTA's own analysis indicate the high layover values which should be reduced.

- The Scheduling unit should strengthen its role as an active participant in manpower planning in cooperation with operations staff. This would include establishment of the extraboard requirement. There is a need to evaluate platform hours in light of scheduled pay hours and pay hours that are actually paid from payroll records.

- A schedule should accompany the list of all activities that are performed during a service change implementation. It should list planning and scheduling activities and their duration. The importance of maintaining this schedule is to acquaint managers of the importance of avoiding last minute changes that result in costly "patches" to the driver assignments. Once service levels are agreed upon, the scheduling process should be initiated with no further changes except for the most unusual circumstances.

- The scheduling has been used as an analytical tool to estimate the impacts of different labor provisions. In view of the staff's proficiency with HASTUS, greater use should be made of the software. This could include changes to contract terms, layover reductions and modifications to downtown transit arrangements.

- The HASTUS software should be used to measure the impacts of assigning trippers differently. Instead of them being performed at overtime, they could be assigned to part-time drivers or handled as open work for the extraboard. The potential financial savings would warrant a review.

The list of recommendations above represent a full agenda for RIPTA scheduling activities which build off the current strengths. The recommendations above provide a constructive set of proposals that will assure efficient use of operators and respond to challenges in the future.

RISK MANAGEMENT AND INSURANCE

It is obvious that RIPTA personnel indeed want to "do the right thing". RIPTA has some very good programs in place or planned that are or will yield significant cost savings. There is also a solid liability claims handling philosophy that has been used for a number of years that provides significant savings. There are however numerous opportunities to improve the risk management function that could translate into significant cost savings and efficiency.

First it is important to understand what risk management is all about.

What is Risk Management?

According to the classic textbooks and general industry practice over the past several decades, the practice of risk management has been divided up into four traditional areas. The big corporations have expanded this to other areas but for RIPTA's purposes managing the following four major risk areas is reasonable and prudent.

Risk Management emphasizes cost savings and reduction of injuries through good management processes that encompass the entire organization. There are numerous opinions on how to get to the final goal of minimizing risk costs and there are multiple ways of getting there. The bottom line is that in any organization there must be an understanding of the reasonably foreseeable risks that an organization faces and plans to deal with them in wide variety of ways.

In RIPTA's case, the following risk management areas are the most appropriate to expend its resources for the greatest payback on its investment. In many cases RIPTA has adequately addressed the following four areas however there is are always opportunities to lower potential costs, reduce injuries and reduce exposure to catastrophic loss in any organization.

The four basic risk management areas that will be the basis of the rest of the report include:

- **Safety and Security**. It is almost always more cost effective to prevent an accident than it is to pay for it after the fact. In addition, prevention pays big dividends in terms of public good will, lack of disruption of an organization and improved productivity. It has been estimated that the actual identified cost of a loss is only 10 – 20% of the total financial impact on the organization. The rest of the costs come from the numerous other productivity draining activities associated with the loss. Society in general also benefits from safe operations as well. Most importantly, safe operations reduce human suffering to employees and the general public. The safety and security area is addressed in a separate chapter of this report.

- **Financing** - Secondly, plans must be developed for financing or paying for the losses that will occur in the day to day operations of an organization like RIPTA. A comprehensive insurance and self-insurance program is needed by any organization to deal with most foreseeable events. Additionally, funding plans must be in place for the large but infrequent losses that hit any large organization such as floods, fires, tornadoes, hurricanes etc. All too often, the potential for losses are underestimated or blamed on unforeseen circumstances. This is no excuse as we all know that bad things happen so management must be aware of this potential and make financial and contingency plans for dealing with these types of losses.

- **Contractual -** Contractural relationships are also a significant risk management issue for any organization. There are typically numerous relationships with various governmental and non-governmental organizations. Many contracts including, Memorandums of Understanding (MOU's), "partnership agreements", purchase orders, construction contracts, vending sales, joint ventures, bus advertising agreements, leases, rental and use of property agreements are typically found in many public transportation organizations. Each one of these has the potential to transfer risk of loss from one party to another. If the contractual responsibilities of either party are not clear, this can lead to substantial, prolonged litigation. This is a very serious matter that does not receive the attention that it should in many organizations. More will be discussed later in the report.

- **Claims Handling** - Finally, proper claims handling is imperative to preserve the assets of any organization. Every organization, no matter how well managed, experiences claims of some sort. The three main day-to-day exposures to loss for RIPTA are vehicle liability claims, damage to vehicles and workers compensation claims. These represent millions of dollars in losses each year. Claims can remain open for years after an injury, dependent upon the jurisdiction that the claim is brought in or if the claim involves a minor under age 18. Other less frequent but no less severe types of losses include significant damage to property of all sorts from manmade or natural perils, theft of funds or claims of mismanagement.

Findings and General Observations

As shown in Figure 12 and 13, the current risk management effort or function is primarily shared by the Director of Risk Management and his staff as well as the Assistant General Manager of Environmental Affairs, Safety and Security, and his staff.

Figure 12
Department of Risk Management

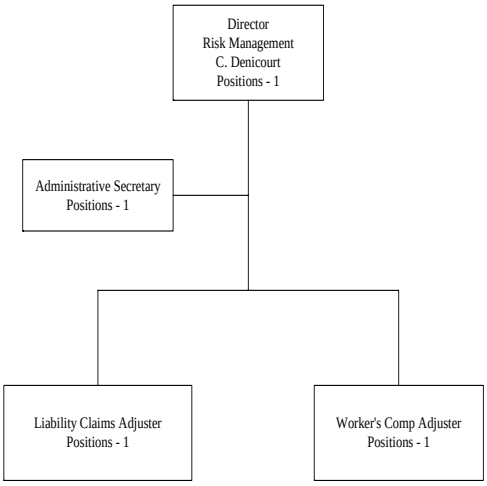
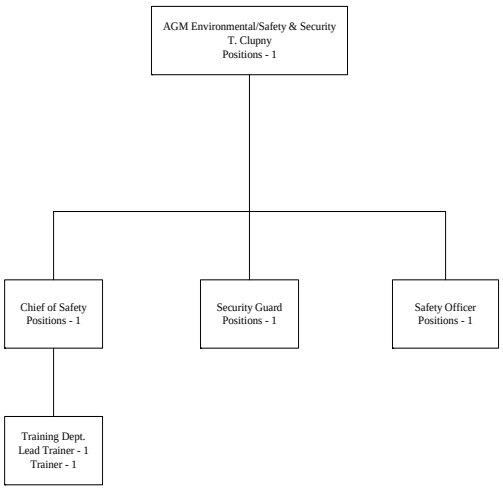


Figure 13
System Safety and Security



Risk management activities also occur in other departments but primary the responsibility for the coordination of the overall function rests in the above two positions. This report refers to the activities that take place in both units. The term risk management refers to the overall organization function rather than where the various activities fall within RIPTA. General observations will be supplemented by specific recommendations or observations below. It should be noted that details of Workers' Compensation claims and practices could not be reviewed as the carrier and Third Party Administrator, Beacon Mutual, would not allow the writer to have access to the files. This important portion of the assignment could not be fully completed.

Conclusions from Review of Risk Management Activities

A review of a number of vehicle liability claims was performed. It appears that the personnel dealing with these claims are very knowledgeable and understand the legal issues involved. Every state has different legal and litigation environments. The Rhode Island system appears to allow lawsuits to remain open for long periods of time that complicates claim handling and increases ultimate costs. This also complicates estimating what the ultimate cost of the claim will be. Claims staff personnel are well aware of this issue and appear to be dealing with it properly. Claims handling for vehicle liability claims appears to be adequate and personnel are well qualified.

Claim handling philosophy for vehicle liability claims is sound and based upon well thought out principles. In many organizations, especially insurance companies, claims are treated as a commodity. Nuisance claims, with no value or basis in law, are given a low priority and many times "bought out" for a relatively small amount of money to "make them go away". This is counter productive as word spreads through the community that "so and so" is an easy target. This type of approach encourages more of these easy claims to be brought by plaintiffs. RIPTA's philosophy is to resist these claims and fight them aggressively. This type of approach is essential for a public transit system and, while it may be somewhat costly initially, it sends a message that RIPTA is not an easy mark, thus saving money in the long run.

The second major technique that is used is to internally "structure" settlements over a long period of time. For a number of reasons, structured settlements are commonly used by the insurance industry to make periodic payments to claimants rather than in one large lump sum. In large cases, RIPTA has successfully negotiated a settlement with payouts over a number of years. Typically, most organizations use an independent structured settlement firm to handle this but the funds must be paid to the firm upfront. Another advantage is that, in most cases, no interest is paid to the claimant. In RIPTA's case, it disburses the funds on an agreed upon schedule thus spreading the budgetary impact over several years rather than one.

This does have the effect of preserving funds in the short term but is not perfect in that large claims can affect the budget for several years in the future. The procedure is essentially a deferral of costs into future budget years.

For example let us assume a $1 million claim settlement. There have been RIPTA claims in this settlement range in the past and they most likely will occur in the future so this is not out of the realm of possibility. The claim process may work as follows:

1. Accident occurs in 2003 and initial reserve is set up.
2. Settlement is reached in 2005.
3. First payment of $250,000 is made in 2005.
4. Second payment of $250,000 is made in 2006.
5. Third payment of $250,000 is made in 2007.
6. Final payment of $250,000 is made in 2008.

Thus the pattern from the date of accident to final payout spans over 6 years. In the meantime other claims have occurred which may or may not be budgeted for. In transit system operations, the vast number of claims are relatively small and can be reasonably budgeted for. Larger claims may occur on a periodic basis. This is one of the reasons that large reserves in the self-insurance fund are needed. It also must be recognized that not every large claim can be "structured" as in the example noted above. In the above scenario, if a structure could not be negotiated, the $1 million would be due immediately.

It appears that there is an ongoing and effective environmental control program in place. Public transit agencies have a number of environmental exposures ranging from underground petroleum storage tanks, disposal or recycling of waste petroleum products and antifreeze, paint booth emissions, tire disposal and a host of other issues. The Assistant General Manager of Environmental Affairs, Safety and Security was previously employed by an outside contractor and provided services to RIPTA. He has since been hired by RIPTA and performs those previous duties and has assumed other responsibilities. This indeed appears to have been a wise decision, resulting in cost savings and continued vigilance in this important area.

In another area, recovery efforts for damage to RIPTA vehicles are aggressively pursued. It is common that other parties will cause damage to public transportation equipment as a result of vehicle accidents. For example, a car or truck hits a RIPTA bus and causes considerable damage. It appears that RIPTA staff has taken an aggressive approach to recover these damage costs from the at fault party and has recovered a significant amount of money as a result of these efforts.

RIPTA receives good performance in the areas noted above. However, there areas where performance could be improved as noted below.

Opportunities for Improvement

As noted in the initial section of this chapter, Safety and Security is an important part of risk management. At RIPTA, System Safety and Security and Department of Risk Management are two separate departments reporting to the General Manager. Ideally, most risk management activities should be under the supervision of one department head. While the "risk manager" has to deal with many other departments on a day-to-day basis, overall responsibility for protecting the assets of the organization from loss due to accidents, theft and other fortuitous type events should rest with one person. Therefore, RIPTA should consider revising the organization and making all risk management type activities under one department. With this change, the organization could include an AGM for Risk Management that would have a separate unit within the department for Safety and Security as well as for Risk Management.

It must be remembered that "Street Supervisors" are an essential and integral part of the risk management function. These people are out on the street observing and taking corrective safety action where necessary. They are also investigating accidents to aid in the claims handling function thereby expanding the resources available to manage risk. They report to the Director of Transportation that is typical within the structure of a public transportation agency.

Operator training should also be incorporated under the Risk Management function. Therefore, if the Safety and Security unit were brought under Risk Management, this recommendation would be accomplished. Two individuals currently in RIPTA's Safety Division perform this important function. If the functions and departments are kept separate, very close coordination should be continued between both departments to insure maximum loss prevention effectiveness.

Claims Handling - Much of the liability claim handling function is being performed manually using a very old system of colored files and hand written action dates on the cover of the file folder. There are computer systems that can make this process much more streamlined and effective. Further, RIPTA is using a very old computer system that does not allow it to effectively use technology to manage the claim handling process. The system was developed by the IBM Corporation in1990 and cannot produce the financial reports typically expected of a claims department. Properly structured loss information is critical in obtaining insurance coverage, especially excess insurance coverage as well as performing actuarial reviews. The current system does not provide that information in an easily useable format. There are numerous claims management systems on the market that can probably be procured for less than $10,000. These systems are very easy to use and would provide significantly improved management information. One of these computer systems is called MicroNiche with its headquarters located in Eugene, OR.

Many insurers have a web based reporting system that records a claim as soon as it is filed. It has been long recognized that prompt reporting of workers' compensation claims is crucial to gaining control of the claim from the outset. This leads to better care for the injured worker as well as significant cost savings for the employer.

It was also determined that Workers' Compensation loss information is not being adequately electronically accessed from Beacon Mutual to determine the overall financial status of the self insured workers compensation plan. RIPTA relies on Beacon Mutual to handle the claims without providing access by RIPTA staff to their files.

Risk Financing and Insurance - Based on the observations listed below, RIPTA may be accepting too much risk for an organization of its size and financial strength. A good and simple exercise that can be performed by any organization is to develop "scenarios" of potentially moderately severe events. The cost components of the accident are then dissected and the assigned potential cost ranges. This does not have to be very sophisticated but a couple of hours of analysis will yield significant insight into the potential costs of a serious accident.

The above observation is based upon the following:

- The organization has little or no sovereign immunity or tort protection so judgments against RIPTA can theoretically be unlimited. Even a single person pedestrian accident involving brain damage or paralysis can cost millions.

- Currently RIPTA does not carry any excess insurance coverage for self insured vehicle liability, workers' compensation or on road vehicle damage claims leaving it potentially liable for millions of dollars in claims in any or all of these major lines of coverage. In other words, there is no transfer of risk to insurers. The Board of Directors made a decision to cancel vehicle excess liability coverage in June, 2005. While insurance costs have been increasing over the past several years for a number of reasons, the reality is that the cost of coverage was not unreasonable for the risk exposures of a public transit system with no protective legislation.

  Consideration should be given to pursuing this issue with the Board again for purchasing a reasonable level of excess coverage. Minimum recommended limits should be $10 million per occurrence above a self-insured retention. This is no guarantee that $10 million will be sufficient in all cases for a transit system without tort protection.

- The current system of self-insurance operates on a "pay as you go" basis. Typical procedure in the industry is to recognize a claim as attributable to the fund or accounting year in which it occurred. Proper reserves are then set up for the case. In RIPTA's case, the Accident and Casualty Reserve Fund has a balance of approximately $315,000 while, according to a recent actuarial report, there are many millions of dollars of outstanding claims ($4.5 million for vehicle liability and $1 million for workers' compensation). These claims are handled as an expense to the transit system. That is one reason why the expenses for this area can vary widely from one year to the next. This was an issue pointed out in the separate Peer Group Analysis Report.

- Vehicle accident damage costs to RIPTA vehicles are not accounted for separately, thus leading to an underestimation of the true financial impact of accidents. In other words, if a RIPTA bus hits a pole, the costs of the accident are not shown as a "cost of risk" but shown as a part of the maintenance budget.

The risks of operating any organization change with time. Frequent revisions to the insurance program are needed to accommodate these changes in risk characteristics.

- RIPTA uses a commercial insurance agent to provide all of its coverage. It has not explored membership in the Rhode Island Interlocal Risk Management Trust, a self-insurance pool that provides coverage to 110 Rhode Island governmental organizations. It was formed in 1986. It could be a good potential option for at least some of RIPTA's coverages at a reasonable cost. It is understood that RIPTA is now exploring this potential source of coverage.

- Excess coverages, when they were purchased, have been obtained from the primary insurance market. A number of markets have not been investigated. Many of the major reinsurers have underwriting arms that specialize in providing high levels of coverage to individual self-insured's such as RIPTA, self insurance pools and captive insurance companies. These entities are broadly referred to as the Alternative Risk Market (ART). Examples are Genesis Underwriting Management Company, a subsidiary of General Reinsurance Corporation and Munich American Risk Partners, a subsidiary of Munich Reinsurance Corporation. States Self Insurer's Risk Retention Group is also another insurer that specializes in larger self-insured entities.

- Most other coverages are purchased from Excess and Surplus Lines carriers, thus increasing costs and lowering protection against insurer insolvency. The explanation given is that RIPTA is a public entity and that insurers shy away from them. This is exactly why hundreds of self-insurance pools such as the Rhode Island Interlocal Risk Management Trust were formed throughout the nation to answer this need.

- Coverage dates are spread throughout the year. This is a problem especially in general liability and umbrella coverages. This leads to non-concurrency of primary and umbrella policies that could produce gaps in coverage. A uniform coverage date should be established for all coverages. It is understood that this issue has been addressed.

- Crime coverages are designed to protect an organization from the theft of its funds or property by employees and others. RIPTA has some minimum coverage in this area that may be too low. For example, RIPTA employee dishonesty limits are $100,000 and $5,000 coverage is placed on money and securities, known as an Honesty Bond. It is suggested that employee dishonesty limits be at least raised to $1 million (desired limits are $5 million) for an organization of RIPTA's size. RIPTA indicated that they do not require any coverage on computer fraud, wire transfer fraud or depositors forgery. RIPTA may wish to review this decision and add these other coverages since they do or may in the future use checks for payment, make payroll by automatic deposit, pay vendors electronically, use computers to access bank accounts and send or receive wire transfers.

- Another issue is with the property insurance program. It was determined that the RIPTA buildings have not been valued in recent years for replacement cost.

- Currently Certificates of Insurance are being handled by the individual "project manager" rather than one person in the organization. Thus Certificates of Insurance are located in various departments throughout the organization. They are not being tracked and a number of certificates that were reviewed were expired or not received at all. The Risk Management Department should be in charge of obtaining all Certificates of Insurance and making sure that they are current. To insure that all RIPTA clients obtain and submit their Certificates, RIPTA could set up a policy that they will not be paid until agreed upon insurance requirements and other provisions have been met.

- Specific insurance requirements should be inserted in all contracts. The types of coverage and limits required should be determined by the degree of hazard of the activity conducted, not the size of the contract. Special caution is needed with sole proprietors, "consultants" and "contract employees" who commonly don't carry insurance, carry minimum levels or have inappropriate coverage.

- There is a common perception that being named as "Additional Insured" on an insurance certificate provides RIPTA with adequate insurance protection. It does not. The Certificate clearly states the following, " If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s)." Therefore, unless RIPTA requests that the policy contains such endorsement, it will have no protection.

- The Operating Agreement between RIPTA and the paratransit operators – called contractors – has very specific insurance requirements on page 31 and 32. Attention is called to paragraph 27 (f) in which additional insured requirements include the Funding Agencies and State of Rhode Island. This has not been done.

- Because contractual risk transfer is such a complicated issue, the person or persons who are assigned this responsibility will probably need additional training.

Workers' Compensation - Workers' compensation costs and injury days off have been reviewed and appear to be much higher than what is considered normal for the industry. For example, the workers compensation policy for the paratransit program has an experience modification factor of 1.24. This means that premiums are 24% higher than "normal" and the cost is an additional $36,000 per year. This is up from 1.13 for the 2004-2005 year. Looking at the losses sustained this year, the premium may even go higher in the future. Losses for the paratransit division for FY 2004/2005 were $184,899. Losses for the first 6 months of this year are almost $80,000. However, due to "trend and development" losses, the total loss could be well over $200,000.

RIPTA has focused its attention in its control of workers' compensation through activities of its contractors, Beacon Mutual. Staff from Beacon Mutual carefully review and monitor each claim to insure that it is proper and justified. In doing so, it will perform "undercover" investigations of all suspicious claims.

Cost saving measures such as a Light Duty/Return to Work Program have been instituted at RIPTA with little success. As a result, employees are out for extended periods of time for relatively minor on the job injuries. A light duty/return to work program is one of the cornerstones for controlling workers' compensation costs. The effect of the unsuccessful program may results higher workers' compensation costs, lost productivity and people "working the system" to stay off the job. Since workers' compensation payments are non-taxable, injured employees take home very close to the same amount as if they were working. To point out the benefit of a Light Duty/Return to Work Program, there is one retired operator, well over 70 years old, that was rehired to work in the paratransit and "Flex" operation. This person hurt his back

almost a year ago and is still out. He is now drawing workers' compensation, his pension and probably Social Security. A total incurred amount of $40,000 is set up on this Workers' Compensation claim. Without a light duty program it is unlikely that he will ever return to work and the incurred amount could be much higher. There are many other cases where an employee could return to useful employment at a different or modified position.

Other collectively bargained public transportation organizations have instituted Light Duty/Return to Work programs. These programs benefit both the employee and employer. A number of specific jobs are identified that can be performed by various individuals with work related injuries. In most cases, a Functional Capacities Evaluation form is given to the treating physician for completion and the job is matched to the ability of the injured worker. Perhaps, a reevaluation of the current management position could be performed to see if positions could be identified for light duty.

Maritime Liability Issues - Maritime liability issues resulting from the ferry operation are a severe exposure that does not appear to have been adequately addressed. The laws that apply to maritime accidents are very different from those that apply on land.

Let's take a hypothetical example. The General Manager and his staff take a delegation of political and business leaders on a trip to Newport to convince them to provide more funding for the ferry service. This is purely a business trip. A bad accident occurs. Is the staff on board considered part of the crew? In some cases it may be. Special legal advice from a maritime attorney is always recommended when such ventures are undertaken.

- Maritime accidents that occur usually result in significant injuries or deaths. Recent examples of these types of accidents include the Lake George accident, Staten Island Ferry disaster and the Baltimore Harbor capsizing.

- By operating the ferry between Providence and Newport, RIPTA is open to maritime claims for liability and possibly Jones Act claims for employees who may travel on the ferry in their official capacity as noted above.

- RIPTA depends solely on the liability policy of the ferry operator for protection. This policy provides $10 million in coverage for Protection and Indemnity (P&I) coverage. RIPTA does not have any coverage over this serious exposure.

- RIPTA has no coverage for either USL&H or Jones Act claims. The argument can be made that public entities are not subject to the USL&H Act but Jones Act liability is unclear. Maritime legal opinion is recommended.

It is unclear as to the exposure that RIPTA may have due to a ferry problem. Therefore, it is recommended that RIPTA have its attorney contact a maritime attorney to determine if any risk exists and if so what steps should be taken to protect RIPTA from such risks.

Pension Fund - The RIPTA pension funds are managed by a Joint Management/Labor Pension Board. Pension funds have large amounts of money and have been targeted in many cases by less than scrupulous people. We know of one pension plan operated by a Joint Management Labor board of a public transportation agency that lost millions due to the actions of a dishonest money manager. RIPTA pension plans currently have assets of approximately $31,000,000. RIPTA also spends millions of dollars each year on other benefit programs. Both of these programs require adequate protection.

Technically, as a public entity, RIPTA is not subject to the Employee Retirement Income Security Act of 1973 (ERISA). It does however have the same risk exposures that private firms have so protection should be in place accordingly. ERISA requirements are a good minimum standard to follow but it must be emphasized that they are minimum standards.

From a risk management standpoint, the two major exposures to loss are theft of funds and mismanagement of investments. Other than good management practices, there are several ways to address these risk management issues.

- The Honesty Bond mentioned above should be modified in at least three ways. The first is that the Joint Management/Labor Pension Board should be specifically named as insureds. The second is that the ERISA endorsement attached to the bond should be modified so that it specifically protects all of RIPTA's benefit and pension plans. This is because the standard endorsement refers to organizations that governed by ERISA, which RIPTA is not. Finally, the limits should be increased substantially as recommended. ERISA requirements are either a minimum of 10% of assets or $500,000 for employee dishonesty. As noted before, the current RIPTA policy is for $100,000. While this ERISA standard of $500,000 is inadequate for a fund this size, the limits are a substantial improvement to the current honesty bond.

- A Fiduciary Liability coverage has been provided to protect the pension fund as of May 18, 2006 in the amount of $1 million per occurrence.

- Efforts should be made to verify that any outside parties involved in the management and investment of pension funds have adequate honesty bonds and professional Errors and Omissions coverage. This includes investment advisors and money manager.

SAFETY AND SECURITY

Organization and Staffing

RIPTA's security function is managed by the System Safety and Security Department. The department has six budgeted positions, of which five are currently staffed. The organization of the System Safety and Security Department is shown in Figure 13 in the prior section.

A summary of the department's staffing is presented in Table 25.

Table 25
Summary of Staffing - System Safety, Security & Environmental Affairs

Position/Title	No. of Positions	
	Budgeted	Actual
AGM Environmental/Safety & Security	1	1
Chief of Safety	1	1
Security Guard	1	*vacant*
Safety Officer	1	1
Lead Trainer	1	1
Trainer	1	1
Total	**6**	**5**

Security Program

RIPTA's security program consists of a number of activities and projects. Currently, RIPTA does not have an adopted System Security Plan. A draft action plan entitled, *System Safety and Security Assessment and Action Plan* has been developed to guide the Authority' development of more formalized security and emergency preparedness plans.

In order to assist transit systems in developing system security and emergency preparedness plans, the Federal Transit Administration (FTA) has established a set of 20 action items that transit systems should consider when developing such plans. These 20 action items are grouped into eight categories. RIPTA's action plan was assessed against the FTA's list of action items. The results of this assessment are discussed below.

Management and Accountability - The security and emergency preparedness plans of any agency should be fully endorsed by the most senior levels of the agency and communicated through the organization all the way to the front line employees. In doing so, transit agencies can be assured that their employees are held accountable for the security and emergency preparedness responsibilities that are under their control. The security plans should be an integrated system program that is also coordinated with other agencies in the region. The plans should include security design criteria in procurements and incident command and management structures. A summary of the assessment of RIPTA's security management and accountability is presented in Table 26.

Table 26
Assessment of Security Management and Accountability

No.	Action Item Description	Assessment
1.	Written security program and emergency management plans established.	In progress
2.	Security and emergency management plans reflect anti-terrorist measures and any current threat conditions.	In progress
3.	Plans are an integrated system program, including regional coordination with other agencies, security design criteria in procurements and organizational charts for incident command and management systems.	In progress
4.	Plans are signed, endorsed and approved by top management.	In progress
5.	Programs are assigned to a senior level manager.	Section II.B
6.	Security responsibilities are defined and delegated from management through to the front line employees.	Section II.C
7.	All operations and maintenance supervisors, forepersons, and managers are held accountable for security and emergency management issues under their control.	Section II.C

As mentioned previously, RIPTA has not yet established formal security and emergency preparedness plans. However, the four action items related to the Management and Accountability are addressed in Section II of RIPTA's *Assessment & Action Plan*. The plan describes the specific responsibilities for the Department of Environmental Safety & Security as well as general responsibilities for managers, supervisors and employees. The plan references departmental procedures, but does not define in detail the security responsibilities for each department nor does it.

Security Problem Identification - Agencies are encouraged to develop a process to assess threats (i.e., activity that causes harm or has potential to cause harm) and vulnerabilities (i.e., physical, operational, or structural characteristics that can be used to carry out a threat) to their systems and to resolve these in order to minimize the agency's exposure. Agencies are also encouraged to participate in the FBI's Joint Terrorisim Task Force (JTTF) and/or the Surface Transportation Intelligence Sharing & Analysis Center (ISAC) to assist them in identifying and responding to known threats. A summary of RIPTA security problem identification activities is presented in Table 27.

Table 27
Assessment of Security Problem Identification

No.	Action Item Description	Assessment
8.	Threat and vulnerability assessment resolution process established	In progress
9.	Participation in the FBI Joint Terrorism Task Force (JTTF) and/or the Surface Transportation Intelligence Sharing & Analysis Center (ST-ISAC).	No activity

Although RIPTA has not conducted a threat and vulnerability assessment (TVA) or prepared a TVA resolution process, it has identified this as one of the components of its System Security & Emergency Preparedness Plan (SSEPP) that it will develop during the 2006 calendar year. Since RIPTA does not have its own police force, there is no need for the Authority to participate in the JTTF. No plans have been developed for RIPTA to participate in the ST-ISAC.

Employee Selection Criteria - Transit systems are encouraged to perform background investigations on front-line operations and maintenance employees. Criteria for conducting background investigations also should be established to ensure that the investigations are comprehensive, but do not infringe on the applicants rights and that the applicants have an opportunity to dispute and correct erroneous findings. An assessment of RIPTA's employee selection criteria is presented in Table 28.

Table 28
Assessment of Employee Selection Criteria

No.	Action Item Description	Assessment
10.	Background investigations are conducted on all new front-line operations and maintenance employees.	Implemented
11.	Criteria for background investigations are established.	Implemented

RIPTA conducts background investigations of all prospective employees. The scope of the investigations include a Bureau of Criminal Investigation (BCI) check, and a Division of Motor Vehicles/Driver's License check. The criteria for conducting background investigations is well established.

Training - All front-line employees should receive training in system security procedures, including procedures to respond to transit-related terrorism, natural disasters, and coordinated emergency management (e.g., multi-agency response to a mass casualty incident). Transit system should also provide materials to their patrons to make them aware of security issues. An assessment of security training is presented in Table 29.

Table 29
Assessment of Security Training

No.	Action Item Description	Assessment
12.	Security orientation or awareness materials are provided to all front-line employees.	Implemented
13.	Ongoing training programs on safety, security and emergency procedures by work area are provided.	In progress
14.	Public awareness materials are developed and distributed on a system wide basis.	No activity

The Environmental Safety & Security Department maintains records of all employees who have received security training. All fixed-route and paratransit operators are required to complete a safety and security training prior to performing any safety or security sensitive job duties. Currently, the focus of RIPTA's training is on system safety issues (e.g., safe driving, on-board emergency procedures, and hazardous materials). System security training, including emergency response procedures, response to transit-related terrorism and continuity of operations, is in the planning stages and will be completed when the SSEPP is completed.

Public awareness materials to inform passengers of RIPTA's efforts to maintain a safe and secure environment have not been developed. Such materials serve two purposes: (1) it notifies passengers of the steps they can take regarding their own personal security and (2) notifies passengers how they can assist RIPTA by reporting any suspicious or illegal activity.

Audits and Drills - Transit systems should conduct audits of their security and emergency management procedures to ensure that they are workable and that they address the areas of likely incidents. Although audits are useful, these should be conducted in concert with exercises and drills. Developing and conducting table-top or live drills provides the best opportunity to determine if policies, plans and procedures are adequate. Not only do drills provide training opportunities, but the also provide feedback that can be used to enhance the overall program. An assessment of security audits and drills is presented in Table 30.

Table 30
Assessment of Security Audits and Drills

No.	Action Item Description	Assessment
15.	Periodic audits of security and emergency management policies and procedures are conducted.	In progress
16.	Tabletop and functional drills are conducted at least once every six months and full-scale exercises, coordinated with regional emergency response providers, are performed at least annually.	Implemented

RIPTA has participated in numerous drills of security and emergency incidents. However, there does not appear to be a formal audit process established to evaluate the lessons-learned from such drills and prepare after-action reports. The following highlights a number of drills in which RIPTA participated.

- Port of Providence Evacuation Drill
- T.F. Greene Airport Evacuation Drills
- U.S. Post Office Biohazard Drill
- Annual Special Weapons and Tactics Hostage Drills
- Rhode Island State Police
- Local Police departments
- Operation Hope - Bio/Chem Release Exercise
- Device (i.e., explosives) Detection (State Fire Marshall)
- Substance (i.e., drugs and drug paraphernalia) Detection (Police K-9 units)

RIPTA's Assessment and Action Plan includes various enhancements to its existing activities. Among these is the establishment of a Safety & Security Review Committee that will identify and resolve safety and security needs.

Document Control - The control of security sensitive information is an important component of any systems security and emergency preparedness plan. Only duly authorized individuals should have access to such documents and their publication and distribution should be confined to only those individuals who need access. Such documents may include:

- Facility Plans and Designs;
- Data and Communications Protocols;
- Vehicle Schematics and Designs; and
- Security Procedures Manuals.

These and other similar documents can expose vulnerabilities of transit systems' operation. As such, their distribution should be tightly controlled. Currently, RIPTA's assessment and action plan does not address the control of security sensitive documents, as shown in Table 31.

Table 31
Assessment of Security Document Control

No.	Action Item Description	Assessment
17.	Access to documents of security critical systems and facilities are controlled.	No activity
18.	Access to security sensitive documents is controlled.	No Activity

Access Control - Access control is even more vital than document control. Controlling access to security critical facilities and equipment ensures the continued safe operation of services and is essential to ensuring the safety and security of patrons, employees and assets. An assessment of access control is presented in Table 32.

Table 32
Assessment of Security Access Control

No.	Action Item Description	Assessment
19.	Background investigations are conducted of those who require access to security critical facilities, and ID badges are used for all visitors, employees and contractors to control access to key critical facilities.	Implemented

RIPTA has a well developed set of measures to control access to security critical facilities and systems. All such facilities have perimeter fencing and security cameras to protect the systems, structures, employees and assets from harm resulting from unauthorized access. Employee ID cards ensure that only properly authorized personnel can access these areas. Furthermore, contractor access at RIPTA facilities currently is being addressed through the development of a facility security plan.

Homeland Security - Transit agencies should develop protocols to respond to the various threat advisory levels as issued by the Department of Homeland Security. In conjunction with participation in the ST-ISAC, transit agencies can use these protocols to position their resources on a daily basis to ensure the maximum level of protection for their patrons, employees and facilities. Currently, RIPTA has not established such protocols, as shown in Table 33.

Table 33
Assessment of Threat Advisory Level Response Protocols

No.	Action Item Description	Assessment
Homeland Security		
20.	Protocols have been established to respond to the Office of Homeland Security Threat Advisory Levels.	No activity

Security Projects and Expenditures

RIPTA's security projects and expenditures include both operating and capital projects. A summary of RIPTA's annual operating expenses related to security is presented in Table 34 for the period from FY 2001 and FY 2005.

Table 34
Annual Security Operating Expenses

Category	FY01	FY02	FY03	FY04	FY05
Access Control	$0.00	$8,601.82	$14,867.99	$7,195.87	$13,392.92
Annual % Change	-	-	*72.8%*	*-51.6%*	*86.1%*
Alarm Systems	$597.18	$652.39	$550.29	$763.24	$915.20
Annual % Change	-	*9.2%*	*-15.7%*	*38.7%*	*19.9%*
Armored Car Services	$5,492.48	$6,494.00	$5,760.10	$5,151.38	$5,471.19
Annual % Change	-	*18.2%*	*-11.3%*	*-10.6%*	*6.2%*
Data Security	$0.00	$3,000.00	$3,239.80	$13,662.00	$2,313.00
Annual % Change	-	-	*8.0%*	*321.7%*	*-83.1%*
Perimeter Security	$87,027.00	$0.00	$0.00	$1,050.00	$0.00
Annual % Change	-	*-100.0%*	-	-	*-100.0%*
Security Personnel	$118,775.67	$167,872.32	$95,576.60	$7,503.12	$7,708.35
Annual % Change	-	*41.3%*	*-43.1%*	*-92.1%*	*2.7%*
TOTAL	$211,892.33	$186,619.80	$119,995.32	$35,328.59	$29,799.95
Annual % Change	-	*-11.9%*	*-35.7%*	*-70.6%*	*-15.6%*
(a) Not applicable					

As shown in Table 34, the amount of annual operating expenditures varied during the period from FY 2001 through FY 2005. The most significant change was in the expenses related to security personnel. Security personnel expenditures in FY 2001 were $118,776. By FY 2005, RIPTA's expenses in this category were only $7,708, a difference of 94 percent.

RIPTA's security projects also include a number of capital projects such as improvements to facility perimeter security, installation of security cameras and equipment, and security upgrades to the Newport CNG fueling station. These projects are being paid for through grant assistance from FTA. A total of $190,870 in grant funds have been programmed for these projects.

Safety Program

It is almost always more cost effective to prevent an accident than it is to pay for it after the fact. In addition, prevention pays big dividends in terms of public good will, lack of disruption of an organization and improved productivity. It has been estimated that the actual identified cost of a loss is only 10 – 20% of the total financial impact on the organization. The rest of the costs come from the numerous other productivity draining activities associated with the loss. Society in general also benefits from safe operations as well. Most importantly, safe operations reduce human suffering to employees and the general public.

Safety is “Job 1” in an organization that provides transportation to millions of people a year. There are so many risk factors involved in operating a public transportation agency. These factors include size of vehicles, numbers of passengers carried, congestion of urban areas, presence of large numbers of pedestrians and bicyclists and the nature of clientele such as the young, old and disabled. These and many other factors compound the degree and intensity of safety controls needed. Being a transit bus operator carries with it a great responsibility – it is not just a job - it is a profession.

While there are some very good programs in place or planned, it is obvious that more work needs to be done on both operator safety and “industrial safety”, (i.e. shop safety). Currently work is being done by an outside contractor to develop much needed programs that include safety training for the paratransit operation. Other improvements are planned for the fixed route side of the organization in the future.

Safety efforts need a very high priority. There are three examples where it is obvious that more work needs to done:

Example 1 - While riding as a passenger in a RIPTA supervisory vehicle from Newport to Providence, a RIPTA bus went past us in the left lane in excess of the speed limit, blew his horn in acknowledgement “to say Hi” and continued on in excess of the speed limit.

Example 2 - A change over of some sort occurs at the corner of Elmwood (a four lane divided highway) and Melrose. The writer observed that the bus stopped and completely blocked the right travel lane with blinkers on, the driver got out and chatted with 2 other drivers for several minutes before the bus continued on.

Example 3 - During pull in after the morning run, buses are stacked up on Elmwood, again blocking the right travel lane. Traffic could not pass safely because the tail end of the bus turning in also partially blocked the left lane. A large truck tried to pass and barely missed the rear of the bus. In both of these examples, the situation could have been prevented or mitigated by requesting the city to ban parking on the corner so that the buses could change over or pull in more safely.

Conclusions and Recommendations - Although RIPTA does not have a fully implemented system security and emergency preparedness plan, it has developed an assessment and action plan that identifies the security plans and procedures that are already in place as well as those plans, procedures and activities that need to be developed. The assessment and action plan also identifies enhancements to existing plans and procedures that are needed.

Through this audit RIPTA’s security assessment and action plan was evaluated against the top 20 security action items that have been identified by the FTA. Based on this assessment, the following recommendations describe actions that RIPTA should take for improving its security program:

- Participate in the Surface Transportation Intelligence Sharing and Analysis Center (ST-ISAC) in order to obtain security threat information on a continuing basis so that it can respond to any threats identified in its service area.

- Develop public awareness materials to inform passengers as to the steps that they can take to enhance security in the operating environment.

- Develop procedures to address control of security sensitive documents and documents pertaining to security critical systems and facilities.

- Develop protocols to respond to the daily security threat advisory levels issued by the Department of Homeland Security.

- Address the safety problems noted in the above examples.

MARKETING AND CUSTOMER SERVICE

Organization and Staffing

The marketing and customer service functions at RIPTA are handled by three departments. Marketing activities at RIPTA and the agency's external and internal communications, government affairs, public relations and community/media relations are the primary responsibility of the Marketing/Communications & Government Affairs Department. In addition, the Department provides direct customer service via its administration of ticketing operations at RIPTA's major hub and the Bus Pass program for Seniors and Persons with Disabilities, located at the Phote ID Office in the same hub. As seen in Figure 14 and Table 35 on the following page, staffing for this department is budgeted for eight positions, seven of which are currently filled.

Figure 14
Department of Marketing/Communications & Government Affairs

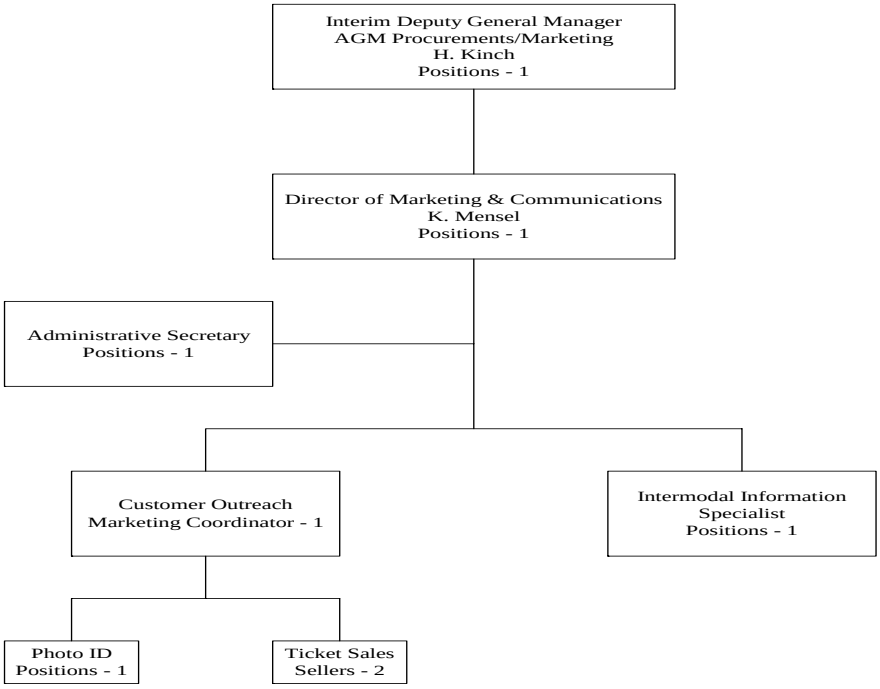


Table 35
Summary of Staffing - Marketing/Communications & Government Affairs

Position/Title	No. of Positions	
	Budgeted	Actual
AGM Procurement/Marketing	1	1
Director of Marketing & Communications	1	1
Administrative Secretary	1	1
Marketing Coordinator	1	*Vacant*
Intermodal Information Specialist	1	1
Photo ID	1	1
Ticket Sellers	2	2
Total	**8**	**7**

In addition to this department, the second group consists of four individuals in the Transit System Development/Grants & Planning Department that specialize in direct marketing of fixed route service and carpooling to businesses and schools. These four individuals make up the Express Travel team that reports to the Planning Manager. The team consists of one Principal Marketing Specialist and three Business Marketing Specialists.

Activities related to customer service, except for ticketing operations in the main hub and the agency's Photo ID Office, which are the responsibility of the Marketing/Communications & Government Affairs Department, are the responsibility of the third group, the Division of Specialized Transportation & Information Technology. Within this division there are six individuals who comprise the customer services group. This group reports directly to the AGM of Specialized Transportation & Information Technology and is discussed in a separate section.

Marketing Activities

RIPTA's marketing activities are guided by its Marketing Plan. The FY 2006 Marketing Plan was published in July 2005. The plan includes specific goals for the period from July 2005 through June 2006. The goals listed for FY 2006 include the following:

- Website research to improve functionality of RIPTA's website;
- Support outreach and promotional activities for UPASS college/university trial programs and Keep Eddy Moving campaigns;
- Renew advertising trade with TV stations, radio stations and other organizations and seek to expand trade opportunities;
- Conduct survey to help determine best ways to retain new customers and develop marketing campaign based on findings;

- Secure sponsorships for key items such as the Official Newport Visitors Map and for promotional campaigns such as the Beach Bus;

- Draft educational and promotional campaign, targeting seniors, individuals with disabilities and other audiences, for the purpose of introducing smart and magnetic-stripe cards in the future; and

- Finalize all proposed policy changes for the bus pass program for seniors and persons with disabilities and secure board vote to hold public hearing on proposed revisions.

The Marketing plan further identifies activities that will be carried out during the year. The activities are identified by month and include targets by which the Authority can determine each activities achievement.

Marketing Budget - A summary of RIPTA's Marketing expenses is presented in Table 36. Between FY 2001 and FY 2005, RIPTA's Marketing budget ranged from $1.3 million to nearly $2.0 million. The largest expenses for Marketing occurred in FY 2003. In FY 2003, ridership increased more than 15 percent, which improved the effectiveness of the Marketing function. The cost effectiveness of marketing is measures as marketing expense per 1,000 passengers. As shown in Table 36, the cost effectiveness of RIPTA's marketing improved significantly between FY 2002 and FY 2004. In FY 2002 marketing expenses were $133.83 per 1,000 passengers, the highest during the five-year period. By FY 2004, decreases in expenses and increases in ridership resulted in marketing costs of $80.82 per 1,000 passengers, an improvement of nearly 40 percent over FY 2002.

Table 36
Summary of Marketing Expenses

	FY2001	FY 2002	FY 2003	FY 2004	FY 2005
Marketing Expense	$1,341,883	$1,885,977	$1,911,999	$1,328,572	$1,577,699
Annual Change		*40.5%*	*1.4%*	*-30.5%*	*18.8%*
Unlinked Passengers	14,220,775	14,092,820	16,265,825	16,439,168	*(a)*
Annual Change		*-0.9%*	*15.4%*	*1.1%*	*(a)*
Expense per 1,000 Psgrs.	$94.36	$133.83	$117.55	$80.82	*(a)*
Annual Change		*41.8%*	*-12.2%*	*-31.2%*	*(a)*

(a) Not available
Source: Expenses from RIPTA 2001 through 2005 financial statements; ridership from 2001 through 2005 NTD reports.

Advertising and Promotion - Advertising and promotion are important parts of RIPTA's marketing plan. Similar to other transit systems, RIPTA's advertising also is used to convey information to its customers. Materials and activities used in RIPTA's advertising and customer information include:

- Print, radio and TV spots;
- Maps and Brochures;
- Schedules;
- *Your Guide to RIPTA Service and Programs* booklet;
- *Destinations* newsletter;
- Official Newport Visitors' Map; and
- RIPTA's website.

RIPTA also partners with a number of organizations in order to promote the use of transit. These organizations include the Providence Convention and Visitors Bureau, Preservation Society of Newport County, Marriott, Newport Convention and Visitors Bureau, Trinity Repertory Theatre, Children's Museum, and Blackstone Valley Tourism Council.

Much of RIPTA's advertising is paid for through trade arrangements with media outlets. In exchange for advertising on RIPTA's buses TV and radio stations will run advertisements and public service announcements promoting various RIPTA services. The media outlets that RIPTA has such arrangements with include:

- UPN Providence (WLWC-TV);
- Clear Channel Broadcasting (WWBB-FM, WHJY-FM, WHJJ-AM and WSNE-FM);
- Telemundo Providence (WRIW-LP)

Other services provided by these media companies include production and editing services and translation into Spanish.

Campaigns - RIPTA has implemented a number of marketing campaigns in order to encourage residents of Rhode Island to use public transportation. These campaigns include:

- **Keep Eddy Moving -** this campaign is focused on encouraging people who commute to the Eddy Street area of Providence to use transit. The purpose is to relieve congestion in this area during the construction phase of the I-195 Relocation project. Commuters to this area are offered 50 percent discounts on RIPTA monthly passes and RIPTIKs and free carpooling match services.

- **Monthly Pass Program -** this campaign focused on encouraging commuters to try transit in response to the increases in gas prices. Several promotions were utilized including radio spots, bus advertisements, print advertisements, and program books.

- **Ozone Alert Program -** RIPTA offers free transportation on Ozone Alert days, when the Rhode Island Department of Environmental Management forecasts that the level of ozone will be unhealthy.

- **Valentine for Brown -** the Express Travel team has arranged a package with Brown University, in which the school subsidizes 50 percent of the cost of Monthly Passes and RIPTIK's.

- **UPASS Program -** the UPASS program is a customized package in which college and university students can use there Student IDs as bus passes. RIPTA's Express Travel team works out the arrangements with the schools, in which the schools pay a set cost based on usage. Participants in this program include the University of Rhode Island (URI), Gibbs College, Providence College, Salve Regina and Johnson & Wales.

Customer Surveys - RIPTA has hired an independent market research firm to conduct customer usage and customer satisfaction surveys for RIPTA's ferry and trolley services. Currently, the firm is conducting surveys of non-riders. Other surveys have been conducted in-house. These include origin-destination surveys and a University of Rhode Island (URI) customer satisfaction survey. A new-user survey has recently been designed and is scheduled to be conducted in the near future.

Website - RIPTA maintains a website at www.ripta.com. The website is used to convey information to the riding public in the following areas:

- Schedules & Fares;
- Transit Programs & Services;
- Transit Facilities Information;
- Transit Benefits; and
- RIPTA Organizational and Contact Information.

The website includes schedules for all of RIPTA fixed-route services. A search engine also is provided for users to look up information that may be contained on the agencies website. The website is used consistently on a monthly basis. Between August 2005 and January 2006, the website averaged 2,240 daily user sessions with each user session lasting approximately six minutes in duration. As shown in Table 37, the cost of maintaining the website, while increasing over the last three years, is relatively low.

Table 37
Annual Cost of Website

Fiscal Year	Cost
FY 2004	$4,155.90
FY 2005	$5,161,80
FY 2006 (through March 2006)	$7,500.00

Source: RIPTA Marketing Department

The Marketing Department would like to improve the website by adding trip planning tools and survey capabilities. The Marketing department has been researching other websites in order to determine how to upgrade its own.

Conclusions and Recommendations - The Marketing and Customer Service functions appear to be managed well. RIPTA's marketing strategy (defined in its FY 2006 Marketing Plan) is to communicate useful, accurate, timely, customer-friendly information on RIPTA's mobility options with the goals of expanding ridership and building support for RIPTA in the community. An unusual feature of RIPTA's organization is that one marketing function – direct marketing of fixed route services and carpooling -- is the responsibility of the Express Travel team in Transit System Development/Grants & Planning Department. Based on this finding, one recommendation is made:

- RIPTA should evaluate the current division of activities in marketing between the Marketing/Communications and Government Affairs and the Transit System Development/Grants & Planning Departments to determine if combining these units under one department may improve coordination of activities.

Customer Service Activities

Customer service staffing is summarized in Table 38 and its position within the Division of Specialized Transportation & Information Technology is shown in Figure 7.

Table 38
Summary of Staffing - Customer Service

Position/Title	No. of Positions	
	Budgeted	Actual
AGM Specialized Transportation & IT	1	1
Customer Service Manager	1	1
Customer Relations Clerk	1	1
Telephone Information Operators	5	4
Total	**8**	**7**

The customer service activities consist of providing travel information to the riding public and receiving and processing complaints. RIPTA maintains an automated telephone information system that allows passengers to get route information and next bus information. The menu system allows passengers to abandon the automated system and speak directly to a telephone information operator. The telephone information operators use printed schedules and maps in order to provide trip planning assistance to customers.

Customer complaints are received by the Customer Services Manager or Customer Relations Clerk. Each complaint is entered into the Public Relations system of the AS400 computer system. A printed copy of each complaint is sent to the AGM of the department to which the complaint is related. Each department is responsible for the disposition of the complaints in their area. The receiving department enters in the resolution information in the Public Relations system. Although RIPTA has established a target of resolving complaints within five days, the Public Relations system does not currently capture this information. The Public Relations system records the date in which the information was entered, which can be several days or weeks after the complaint was actually resolved.

The Public Relations system has 60 different categories of complaints (31 for fixed-route and 29 for paratransit). The Public Relations system does not have summary reporting capabilities for customer complaints. Summaries must be tallied manually from raw data on individual complaints that is dumped from the AS400 system.

A summary of fixed-route complaints for the 12-month period from February 2005 through January 2006 is presented in Table 39. The majority of the complaints relate to missed service, discourteous drivers and on-time performance.

Table 39
Summary of Complaints – Fixed-Route - February 2005 through January 2006

Category	Number	Percent
Bus Never Came	104	15.4%
Passed by Customer	103	15.3%
Driver Attitude	98	14.5%
Bus Early	62	9.2%
Incorrect Route	60	8.9%
Poor Driving	58	8.6%
Bus Late	48	7.1%
Other	34	5.0%
Cell-Phone Use	25	3.7%
Erratic Driving	17	2.5%
Fare Complaints	14	2.1%
Wheelchair	12	1.8%
Overcrowded	9	1.3%
Smoking Operator/Passenger	9	1.3%
Employee Complaints	5	0.7%
Routing Issues	4	0.6%
Unauthorized Stops	3	0.4%
ADA Issues	2	0.3%
Fumes	2	0.3%
Bus Stop Relocation	1	0.1%
Bus Stop Replacement	1	0.1%
No ADA Announcement	1	0.1%
No Air Conditioning	1	0.1%
No Heat	1	0.1%
Suggestions	1	0.1%
TOTAL	**675**	**100.0%**

Source: RIPTA Monthly Passenger Complaints.

A summary of passenger complaints for the RIde Program, RIPTA's paratransit service, for the 12-month period from January 2005 through December 2005 is presented in Table 40. As shown in this exhibit, the majority of the complaints on the RIde are categorized as Other, which does not provide much useful information on a summary level. Furthermore, only nine of the 29 categories of complaints are being used on a regular basis. The 20 unused categories do not appear to serve any useful purpose for complaint reporting.

Table 40
Summary of Complaints - RIde Program - January 2005 through December 2005

Category	Number	Percent
Other	89	57.1%
Driver Attitude	22	14.1%
Taxi Issues	21	13.5%
Bus Late	7	4.5%
Erratic Driving	7	4.5%
Bus Never Came	5	3.2%
Bus Early	3	1.9%
No Air Conditioning	1	0.6%
Cell Phone Use	1	0.6%
TOTAL	**156**	**100.0%**

Source: RIPTA Monthly Passenger Complaints.

Conclusion and Recommendations - Customer information and customer complaints in this Department are adequately addressed. However, summary reporting of complaints data could be streamlined and improved. Furthermore, RIde complaint categories appear to be superfluous since the majority of complaints are categorized as other.

The following recommendations are offered to address concerns in this area:

- RIPTA should streamline its complaint reporting in order to automate the compiling of summary statistics.

- RIPTA should revise the categories of complaints for the RIde Program so that complaints currently received under the "Other" category can be compiled in a more meaningful way.

INFORMATION TECHNOLOGY

Organization and Staffing

The Information Technology (IT) function in RIPTA is handled through the Business Analysis and Development Department. As shown in Figure 7, this function is under the AGM for Specialized Transportation and Information Technology. The Department, also known as the IS Department is responsible for managing the operation of the agency's computer networks and peripheral equipment. The Department is staffed by six positions. The AGM of Business Analysis and Development reports directly to the AGM of Specialized Transportation & IT.

Department Expenses

The IS Department's expenses for the period from FY 2001 and FY 2005 are shown in Table 41. These expenses do not include staff salaries and benefits, but include the costs for professional services to develop and upgrade software, maintain and repair equipment and purchase supplies. As shown in this table, the largest portion of expenses in most years went towards professional services. Between FY 2001 and FY 2004, costs of professional services was consistently more than half of all IT expenses due to consultant fees for an IT needs assessment and implementation plan. The second largest share of expenses goes towards Maintenance Agreements. In FY 2005, this relationship reversed with Maintenance Agreements expenses representing a greater proportion of IT expenses than Professional Services.

Table 41
Summary of IT Expenses

Category	FY 2001		FY 2002		FY 2003	
	Amount	% of Total	Amount	% of Total	Amount	% of Total
Professional Services	$92,913	63.3%	$339,150	88.2%	$205,140	62.9%
Maintenance Agreements	$53,919	36.7%	$44,603	11.6%	$121,243	37.1%
Other Services	$21	0.0%	$601	0.2%	$0	0.0%
Computer Material & Supplies	$54,483	37.1%	$39,931	10.4%	$95,066	29.1%
TOTALS	$146,853	100.0%	$384,354	100.0%	$326,383	100.0%

Category	FY 2004		FY 2005	
	Amount	% of Total	Amount	% of Total
Professional Services	$120,584	53.3%	$80,013	40.5%
Maintenance Agreements	$105,570	46.7%	$117,476	59.4%
Other Services	$0	0.0%	$293	0.1%
Computer Material & Supplies	$24,945	11.0%	$8,462	4.3%
TOTALS	$226,154	100.0%	$197,782	100.0$

Source: RIPTA IS Department

Description of the IT Network

RIPTA's computer systems are connected over a wide area network (WAN). The WAN includes several local area networks (LAN's) that provide data and communications services throughout the Authority's locations. The major equipment that comprise the networks include:

- One IBM Application System 400 (AS400);
- 11 Microsoft Windows Servers;
- 144 PC Workstations;
- 66 Printers; and
- 19 Notebook Computers.

The WAN encompasses all of RIPTA's facilities. Facilities that are remote from RIPTA's administrative offices are connected to the network through leased T1 lines.

The AS400 and the 11 Microsoft Windows servers form the backbone of RIPTA's network. RIPTA departments have access to the servers through individual PC workstations. The assignment of workstations by department is summarized in Table 42.

Table 42
Assignment of PC Workstations

Department	Number of Workstations
IS	15
RIde	25
Maintenance	16
Transportation	14
Planning	13
Finance	9
Procurement	8
Marketing	6
Human Resources	5
Administration	4
Centralized Maintenance	4
Scheduling	4
Specialized Transportation	3
Risk Management	3
Safety	3
Stock Room	3
Express Travel	3
Flex Service	3
Payroll	2
Graphics	1
Total	144

Source: RIPTA IS Department

RIPTA's data processing needs are handled by a heterogeneous network comprised of the the AS400 server combined with11 Microsoft Windows servers.

The major applications on the AS400 system are part of a platform developed by HTE and includes:

- **Transportation Operations** - this is a custom application used to track daily operations data such as timekeeping, dispatching, roadcalls, and payroll information. The application also transfers public timetable information to RIPTA's i-Messaging i-Voice System, which relays information to customers through the phone system.

- **Service Operations** - this is a custom application that is used to generate maintenance work orders for trouble calls and preventive maintenance inspections. The application also receives roadcall data from the Transportation Operations application and relays this information to other applications such as Fleet Management and Safety/Claims Management.

- **Safety/Claims Management** - this is a custom application comprised of two modules, Safety and Claims. The Safety module tracks accident and incident data relayed through the Service Operations application. The Claims module generates claims using data relayed through the Safety module

- **Public Relations** - this is a custom application used to track customer complaints and commendations.

- **Government/Management and Budgetary Accounting** - this is an off-the-shelf application that is used to perform all general ledger accounting. Input is either entered directly into the application or is relayed from other applications. Applications that provide input into the Government/Management and Budgetary Accounting (GMBA) program include:

    - **Accounts Receivable** - sends journal entries to GMBA to record revenue and receivables and process customer refunds. The application also tracks inventory through charge codes and receives payment and deposit information from Cash Receipts.

    - **Payroll/Personnel** - receives data from Transportation Operations and the Maintenance Department's Kronos timekeeping system and distributes expenses and liabilities of employee wages and salaries to the general ledger. The system also maintains personnel records.

    - **Cash Receipts** - sends entries to GMBA to record cash receipts and transfers payment information to the appropriate applications.

- **Fixed Assets** - sends entries to GMBA to record the purchase, depreciation expense and disposal of assets. This application works in concert with the Purchasing/Inventory application.

- **Purchasing/Inventory** - sends encumbrance entries to GMBA to handle purchase orders and accounts payable and process receipt of goods and also records inventory adjustments. Relays information to the Fixed Assets application and maintains the inventory of parts and fluids for the Fleet Management application.

- **Fleet Management** - receives data on roadcalls and scheduled maintenance from the Service Operations application. Also received data on parts inventory from Purchasing/Inventory and tracks daily fuel usage through the fuel management system. This application sends entries to GMBA to record billing of vehicle costs to related departments.

- **Extended Reporting** - receives data from GMBA to generate specialized and user-defined reports.

- **Applicant Tracking** - this is an off-the-shelf package used by the Human Resource department to manage information related to job openings, ranking of job applicants, tracking job advertisements, and EEO reporting.

The AS400 System is capable of generating numerous standard and user-defined reports. The following are a sample of some of the Monthly General Manager Reports that have been programmed into the system:

- MDBF, MDBSI - Fixed Route
- MDBF, MDBSI - Specialized
- Accidents - Fixed Route
- Accidents Specialized
- Passenger Accidents - Fixed Route
- Passenger Accidents - Specialized
- Lost Time Accidents
- Trips Completed - Fixed Route
- On-Time Pullout - Fixed Route
- Bus Availability - Fixed Route
- On-Time Performance - Fixed Route
- On-Time Inspections
- Wheelchair Reliability
- Employee Availability
- Materials Management
- Trips Completed - Ferry
- Environmental Compliance

- On-Time Performance - Specialized
- Ride Program Trip Totals
- Monthly Complaints

While information is available to staff through these reports, there appears to be some limitations in how the information can be collected and used. For example, the customer complaints information can be reported in detail, but there is not a summary reporting feature that organizes the data by category and provides statistics such as number or percentage of complaints open versus closed. RIPTA staff must extract the detailed data form the AS400 system and prepare these reports using other software.

The 11 Microsoft Windows servers process and provide reports on the following data:

- Email
- User Data
- Public Data
- Fixed Route Database
- Paratransit Database
- Telephone systems including Voice Mail, Automatic Call Distribution and Monitoring and Interactive Voice Response (IVR)

Maintenance of Hardware and Software

RIPTA ensures that its IT network is maintained through contract with third-parties. As shown in Table 41, maintenance contracts have represented an increasing proportion of RIPTA's IS Department expenses since FY 2002, when maintenance contracts were 11.6 percent ($44,603) of total IT expenses as compared to FY 2005 when maintenance contracts were 59.4 percent ($117,476) of total IT expenses. A list of RIPTA's current maintenance contracts is presented in Table 43.

Table 43
Summary of Current Maintenance Contracts

Vendor	Description	FY2006 Cost
ATC Paratransit	Paratransit Scheduling Software Support	$60,362
SunGard HTE, Inc.	Accounting, Maintenance, Procurement and HR Software	$51,150
Giro, Inc.	Scheduling and Runcutting Software Support	$23,187
Nu-Vision Technologies	Telephone System Maintenance	$11,262
Retrofit Technologies, Inc.	AS400 Hardware and Peripherals Maintenance	$5,489
Unicom, Inc.	Cisco Switches and Routers Maintenance	$6,071
iMessaging Systems, Inc.	Interactive Voice Response (IVR) Hardware and Software	$5,490
Cox Communications	High Speed Cable Internet Access	$4,668
Kronos, Inc.	Employee Timekeeping Hardware and Software	$3,786
NEPS, Inc.	Payroll Checks and Forms Software Support	$3,192
Unicom, Inc.	McAfee Anti-virus License and Support	$2,844
Higgins Corporation	Kennedy Plaza Photo ID Printer Maintenance	$1,655
Higgins Corporation	Human Resources Photo ID Printer Maintenance	$1,690
Higgins Corporation	Portable Photo ID Printer Maintenance	$975
Conversent Comm.	Dial-up Internet Access for IS Department	$718
Unicom, Inc.	Commtouch Anti-spam Software License and Support	*(a)*
Higgins Corporation	Human Resources Photo ID Printer Maintenance	$1,690
Higgins Corporation	Portable Photo ID Printer Maintenance	$975
Conversent Comm.	Dial-up Internet Access for IS Department	$718
Unicom, Inc.	Commtouch Anti-spam Software License and Support	*(a)*
Unicom, Inc.	Firewall Protection for RIPTA Network	*(a)*
Unicom, Inc.	Arcserve Network Backup Software License and Support	$1,430
Total		$183,969

(a) Multiple year contract, paid up front

Equipment and Software Upgrades

Upgrades to the IT Network hardware and software are programmed into the IS Department's Capital Plan. For FY 2003 and FY 2004, the IS Department programmed $1.5 million in each year for IT hardware and software upgrades. As shown in Table 44, the actual budgets for IT capital expenses was reduced by 33 percent in FY 2003 to $1,008,000 and by 57 percent in FY 2004 to $642,000. Requested amounts for the following years were $1.0 million in FY 2005 and $500,000 in FY 2006 and FY 2007.

Table 44
IS Department Capital Plan - FY 2003 through FY 2007

Expense Item	FY 2003		FY 2004		FY 2005	FY 2006	FY 2007
	Requested	Actual	Requested	Actual	Requested	Requested	Requested
Personal Computers	$150,000	$90,000	$155,000	$210,000	$175,000	$100,000	$90,000
Printers	$50,000	$50,000	$50,000	$50,000	$60,000	$35,000	$25,000
Programming Services AS400	$50,000	$20,000	$55,000	$20,000	$60,000	$65,000	$35,000
Programming Services All	$50,000	$40,000	$75,000	$50,000	$90,000	$65,000	$75,000
Peripherals	$25,000	$10,000	$25,000	$25,000	$25,000	$25,000	$25,000
Technical Training	$50,000	$50,000	$100,000	$65,000	$55,000	$60,000	$50,000
User Training	$100,000	$0	$200,000	$50,000	$110,000	$50,000	$50,000
Upgrade Server Operating Sys.	$0	$0	$200,000	$0	$0	$0	$0
Switch/Routers	$0	$12,000	$50,000	$12,000	$0	$0	$75,000
MobileLaptops/Supervisors	$150,000	$0	$80,000	$0	$0	$0	$0
Software	$275,000	$80,000	$160,000	$80,000	$175,000	$0	$0
E-Commerce Software/Services	$0	$0	$200,000	$0	$0	$0	$0
Technical Services	$100,000	$25,000	$100,000	$50,000	$100,000	$100,000	$75,000
Servers	$50,000	$50,000	$50,000	$30,000	$0	$0	$0
CIS Software	$0	$0	$0	$0	$150,000	$0	$0
VRU	$200,000	$250,000	$0	$0	$0	$0	$0
Trans Software	$250,000	$250,000	$0		$0	$0	$0
Personal Action File & Data Mart	$0	$81,000	$0	$0	$0	$0	$0
Total	$1,500,000	$1,008,000	$1,500,000	$642,000	$1,000,000	$500,000	$500,000

In 2002, RIPTA had prepared an *Information and Technology System Needs Assessment and Implementation Plan*. The Plan identified a number of limitations with RIPTA's AS400 system, in particular the HTE software. These included findings in the following areas:

- Limitations in the Fleet Management, Purchasing/Inventory and Finance programs resulting in inefficiencies and duplicative processes.
- Navigational issues associates with the HTE's lacking a graphical user interface (GUI), resulting in repetitive keystrokes in order to move through different functions.
- Limited reporting capabilities, custom reports require programmer intervention to produce user-defined reports.
- Manual intervention required in some functions that could be automated.
- The AS400 System and HTE software, particularly the Transportation Operations program is not consistent with the national ITS Architecture and therefore, will hinder the Authority's ability to derive benefits from ITS.

The Plan identified the future needs for RIPTA's information technology and made short term and long term recommendations for addressing these needs. The Plan included a strategy for migrating RIPTA's current systems towards a system that will meet future requirements.

RIPTA's list of scheduled upgrades does not appear to address a number of the concerns identified in the Plan.

Statewide ITS Architecture

RIPTA participates in the Rhode Island Department of Transportation's (RIDOT's) Intelligent Transportation System (ITS) Strategic Implementation Plan, *Rhode Ways*. The plan intends to conform to the Federal Transit Administration's (FTA's) National ITS Architecture Policy and indicates that it will adhere to U.S. Department of Transportation's (USDOT's) adopted ITS standards. As a supplement to the Statewide ITS Architecture, RIPTA has published an ITS Strategic Deployment Plan, which lists the following ITS projects for RIPTA:

- Information Technology Needs Assessment and Implementation Plan
- Consolidation and Standardization of Databases
- Bus Stop Inventory (BSI)
- Providence Transportation Information Center (ITS Demonstration)
- Upgrade and Expansion of RIPTA's Transit Scheduling and Operation Management Software Package
- Smart Fare Collection Equipment
- Implement the Inter-Tel Axxessory Call Center Using Automatic Call Distribution (ACD) Replacing the Current Unified Call Distribution (UCD) Functionality
- Procurement and Installation of Voice and Data Communications Equipment for Kennedy Plaza

The ITS Strategic Deployment Plan does not include a description of a systems engineering analysis process that RIPTA will use to evaluate ITS Projects. A systems engineering analysis is a structured process for evaluating the characteristics, benefits and shortcomings of a number of alternatives in order to develop a final system design. The analysis should consider the total life-cycle of the project including the project's technical merits, costs and the relative value of alternatives. A systems engineering analysis process is required under the FTA National ITS Architecture Policy.

Conclusions and Recommendations

The Business Analysis, Development and Information Technology Department appears to be managing the IT related functions of the Authority well. Technology solutions are deployed as needed and maintained to ensure continuous data availability. Upgrades are budgeted to ensure that the Authority's software and hardware do not become obsolete. However, the list of scheduled upgrades does not appear to address a number of the issues identified by the *Information Technology System Needs Assessment and Implementation Plan*. Furthermore, RIPTA is participating in the Statewide ITS Architecture, but appears not to have a documented process for conducting a systems engineering analysis of USDOT-funded ITS projects.

The following recommendations are offered to address the issue related to RIPTA's information technology function:

- While it may be impractical for RIPTA to replace the AS400 system in the near future, the Authority should develop a plan to migrate towards a system over the next five to 10 years that will be able to accommodate its future needs, particularly as these relate to RIPTA's implementation of ITS technologies.

- RIPTA should develop a systems engineering analysis process in order to evaluate all USDOT-funded ITS projects. The process should include the following:

    - Identification of portions of the Statewide ITS architecture being implemented;
    - Identification of participating agencies' roles and responsibilities;
    - Definition of requirements;
    - Analysis of alternative system configurations and technology options to meet requirements;
    - Analysis of financing and procurement options;
    - Identification of applicable ITS standards and testing procedures; and
    - Procedures and resources necessary for operations and management of the system.

LITIGATION MANAGEMENT

A review was made of the Litigation Management function at RIPTA. This function involves support from outside legal firms in four major areas – Workers Compensation, Risk Management, Labor and General Counsel.

Use of Outside Legal Support

Three law firms support RIPTA management in legal matters as identified below:

Revens, Revens & St. Pierre, LLP for Workers Compensation/Risk Management
Nixon Peabody, LLP for Labor, and
Tillinghast, Licht, LLP for General Counsel.

During the past five years, the legal fees associated with the work performed by the legal firms that support RIPTA has declined significantly from $617,362 in FY 2002 to $430,320 in FY 2006, or a 30 percent decline. Outside legal services are now less than one percent of RIPTA's total operating costs. RIPTA is using outside legal services only when they are truly needed.

RIPTA uses three outside firm since each firm offers an expertise in the area in which they support RIPTA. The expertise that RIPTA requires cannot be found in one firm. Therefore, resources of three firms are utilized. Likewise, even if RIPTA were to have its own legal staff, it would likely need outside legal support for certain legal matters. Further, most firms the size of RIPTA employ outside legal services. Transit systems that have their own legal counsel also use outside legal services to address certain legal matters.

Based on these findings, there are no recommendations made in the Litigation Management area.