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Estimation of Operating and Maintenance Costs for Transit Systems

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FEDERAL TRANSIT ADMINISTRATION

Estimation of Operating and Maintenance Costs for Transit Systems

**Final Report
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I. INTRODUCTION

PURPOSE OF THIS REPORT

This report provides guidance regarding the development and application of operating and maintenance (O & M) cost models and supplements the Federal Transit Administration's *Procedures and Technical Methods for Transit Project Planning*. An operating and maintenance cost data base containing representative information for motor bus, rail rapid, light rail, and commuter rail modes is presented. The data base provides 1) labor productivity and unit cost information that can be directly applied in structuring O & M cost models and 2) aggregate costs per unit of service for major functional areas at peer transit properties that can be used to test the reasonableness of model results.

This report draws on the operating experience of many transit systems contained in Section 15 data reported to FTA, in detailed budgets of several representative transit systems that operate light rail, and previously developed cost models. While this appendix is not intended as a standard or specification, it does outline the expectations of the FTA Office of Grants Management when it reviews operating costing methodology reports, Alternatives Analysis/Draft Environmental Impact Statement Reports, and Detailed Financial Analysis Reports for the Locally Preferred Alternative, including:

- **Level of detail:** Transit systems are complex businesses composed of a broad range of operational, maintenance, and administrative functions. Each function is composed of many components; each component is driven by the quantity of service provided and factors related to management and governance board policy and legislative and regulatory mandates. Because of inherent differences between transit systems, the level of detail in the O & M cost model should be sufficient to assure that costs specific to the transit property are accurately being addressed.
- **Extent of documentation:** Because of the level of detail noted above, a large amount of data and assumptions are included in the O & M cost models. This information should be referenced so that when the model is reviewed the appropriateness of the data can be assessed.
- **Tests of reasonableness:** The results of the O & M cost models, both in terms of total and component costs, should be carefully assessed for reasonableness. This includes comparisons to peer transit properties and comparisons to historical operations.
- **Sensitivity tests:** The O & M cost models should be structured so that uncertainty in various model components can be examined. Analysis of risk is an important part of the financial analyses conducted as a part of alternatives analyses and the analysis of the locally preferred alternative.

ORGANIZATION OF THIS REPORT

The report begins with a discussion of ten principles of operating cost models used in alternatives analysis and preliminary engineering. Next, the sources of information that may be utilized in structuring O & M cost models are reviewed, including a discussion of the advantages and disadvantages of each source. The O & M cost data base is then described, including the sources of data, organization, and potential application. Finally, guidelines for the documentation of O & M cost models are discussed.

II. PRINCIPLES OF OPERATING AND MAINTENANCE COST MODELING

INTRODUCTION

This section addresses ten principles of O & M cost modeling for use in alternatives analysis (AA) and preliminary engineering (PE). These objectives address both the process by which O & M cost models are structured and the manner in which they are applied:

- Principle 1: Reflect historic operations
- Principle 2: Anticipate future operations
- Principle 3: Address all functional responsibilities of the transit property
- Principle 4: Focus on major cost components
- Principle 5: Apply consistent level of service data
- Principle 6: Apply peer transit property experience
- Principle 7: Apply readily available information
- Principle 8: Provide fully-allocated costs for use in cost-effectiveness analysis
- Principle 9: Structure for sensitivity analyses
- Principle 10: Document model theory and application

PRINCIPLE 1: REFLECT HISTORIC OPERATIONS

O & M cost models should reflect recent operations, including the cost experience and associated operational trends of the transit property that will operate the transit system addressed in AA and PE. Examination of detailed operating budgets, Section 15 data, staffing plans, and operational data are typical points of departure for such analyses. Among the trends that should be examined are the following:

- **Labor productivity:** Labor productivity is affected by the union contract and work rules and by the service profile by time of day. If no changes are anticipated, labor productivity ratios (e.g., scheduled operator pay hours per platform hour, actual pay hours per scheduled pay hour) should remain unchanged.
- **General and administrative costs:** Many transit properties find that general and administrative costs do not grow at the rate of service growth. Some of these costs are relatively fixed, responding to governance board policies and state and federal legislative and regulatory mandates.

The process of establishing values for the various coefficients in resource build-up cost equations (the "calibration" of the model) should be based on a careful examination of recent cost trends. Projected improvements in labor productivity and unit cost should be justified, e.g., planned improvements in physical plant. O & M cost models should be validated against the current and/or prior years' budgets. To the extent that the model is based on the same assumptions as the budget, the results should be similar to budget values.

It is recommended that if cost models are calibrated based on a single year of budget or actual data, then they should be validated by applying the model to a different prior year. Another approach would be to calibrate the model based on a multi-year trend of costs. Exhibits 1 and 2 summarize an analysis in which five years of Section 15 data were reviewed. Exhibit 1 summarizes a trend analysis of aggregate costs of motor bus service per vehicle-mile and per vehicle-hour. The erratic cost per mile experience suggests that the recent decline might not continue and that the average value may be a better predictor of cost. Indeed, in terms of overage cost per hour, costs have been increasing. Exhibit 2 summarizes the validation of the O & M cost model. The relatively minor variances between modeled and historic actual costs indicate that the model was properly validated.

PRINCIPLE 2: ANTICIPATE FUTURE OPERATIONS

The most appropriate perspective in structuring O & M cost models is that they should embody the full range of management concerns addressed in the transit property's budgetary process. To a large extent, annual budgets (particularly "zero-based" budgets) are a "model" of the coming year's operations. Such budgets can be the point of departure for structuring O & M cost models.

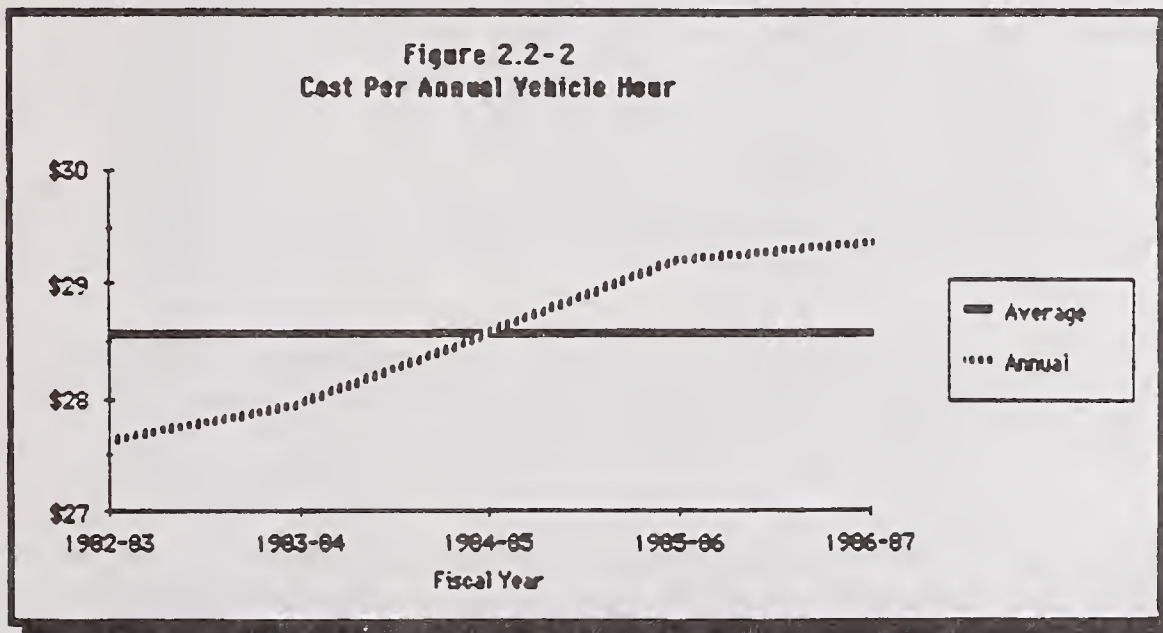
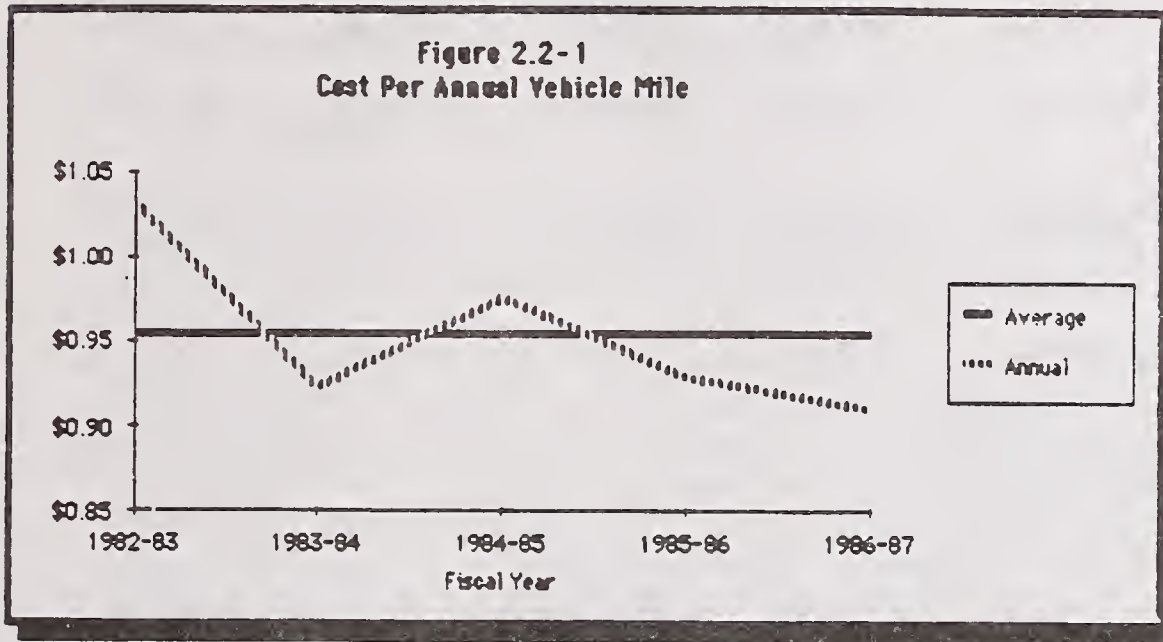
The models should address the following types of cost factors that will change in the future:

- **Inflation:** The O & M cost model should be able to model the impact of inflation on costs. In particular, the models should be able to distinguish the projected inflation rates for major cost components (including wages, salaries, fringe benefits, fuel, and electricity) for which detailed inflation projections may be available.
- **Union contract:** The O & M cost model should reflect known and anticipated changes in the union contract that will affect costs. Examples of such changes include:
 - Wage changes (both lump sum payments and periodic raises)
 - Work rules changes which affecting computation of pay time)

In most cases, the productivity of rail operators for a new rail system will be governed by the same collective bargaining agreement as for current bus operators. The work rules in such agreements will, in large measure, determine the constraints on scheduling and dispatching and on premium pay for rail operators.

EXHIBIT 1

ANALYSIS OF TRENDS IN O & M COST BASED ON SECTION 15 DATA



Source: City and County of Honolulu, Rapid Transit Development Project, Working Paper 4.4.1, Operating and Maintenance Cost Methodology, May 4, 1988, Figures 2.2-1, 2.2-2

EXHIBIT 2

EXAMPLE OF VALIDATION OF O & M COST MODEL

	1982-83	1983-84	1984-85	1985-86	1986-87
Predicted Cost (Millions)	\$53.110	\$53.234	\$54.445	\$54.641	\$54.587
Actual Cost (Millions)	\$53.090	\$51.897	\$54.527	\$55.049	\$55.511
Variance Predicted to Actual	0.0%	2.6%	-0.2%	-0.7%	-1.7%

Source: City and County of Honolulu, Rapid Transit Development Project, Working Paper 4.4.1, Operations and Maintenance Cost Methodology, May 4, 1988, Table 2-3.

For similar service profiles (e.g., peak-to-base ratio; relative number of straight, split, and tripper runs) future operator productivity should be similar. This would include such measures as:

- Revenue plus deadhead hours per platform hour
 - Scheduled pay hours per platform hour
 - Actual pay hours per scheduled pay hour
- **Fringe benefit costs:** Rising health care and insurance costs are likely to continue, most likely increasing faster than wages. For this reason, it is likely that historical fringe benefit rates may understate future costs.
 - **Aging fleet:** Maintenance costs should reflect possible changes in the average age of the fleet. One bus maintenance standard is that the ideal fleet mix is an average age of six years (one-half the 12-year useful life), with one-twelfth of the fleet replaced each year. Few transit properties achieve this ideal, however. As a result, the age distribution varies from property to property. Further, the average fleet age for a given property changes over time, as older subfleets are retired and new subfleets are added.

In general, maintenance costs (measured in labor hours per 1,000 vehicle miles, parts cost per mile, and fuel consumption per mile) increase as vehicles age. These trends can be verified through the analysis of subfleet-level data typically available in a maintenance work order management information system, if available. Older buses will generally require more labor, parts, and fuel costs per vehicle-mile. If new or rehabilitated buses will be introduced, appropriate efficiencies should be included.

- **Aging infrastructure:** Similarly, the cost for maintenance facilities, structures, and non-vehicle equipment will increase as they age. O & M cost models should recognize that infrastructure components require additional maintenance as they age.
- **New technology:** New technology can be a "double-edged sword" with respect to O & M costs. It can improve productivity and reduce costs in some areas yet increase costs in others. For example, in the case of a new bus garage, it may be appropriate to include some operating efficiencies resulting from improved physical layout, lighting, inspection pits, and the like. At the same time, a new building may have lighting, ventilation, and pollution control systems that will be more expensive to operate than an older "less efficient" building.
- **General administration costs:** The addition of rail transit service or a significant increase in bus service (e.g., busways) suggests that there may be significant increases in various administrative activities. A fully-allocated cost analysis would suggest that such increases in indirect costs would be

proportionate to the overall increase in direct operating costs (for the service delivery or transportation and maintenance functions). Comparisons of alternatives require that fully-allocated costs be used in the evaluation measures.

On the other hand, in the case of incremental changes in service (e.g., extension of a rail transit line) an incremental cost analysis may be more appropriate. This is especially true where O & M cost models are sufficiently detailed that specific administrative functions (and the associated staff) can be clearly identified.

- **Changing work force:** The transit industry is facing a significant change in its work force which can have significant impacts on operating cost. Demographers project that the number of high school graduates entering the work force will decline each year in the 1990's. Further, reflecting overall demographic trends, the typical new hire is more likely to be married and a parent, with less education and technical skills. The impacts of these changes include:

- **Higher wages:** Competition for skilled entry-level employees is likely to put upward pressure on wages. While there will be tremendous pressures to contain costs, transit managers will likely want to avoid becoming "the employer of last resort".
- **Higher training costs:** A diminishing number of high school graduates and an increasing percentage of the population for whom English is a second language are some of the most important reasons why training costs are likely to increase.
- **Suboptimal utilization of manpower:** Scheduling and dispatching of operators involves managing the use of overtime as a resource. Optimal sizing of the operator extraboard involves trade-offs between undersizing, which results in excessive overtime premium pay, and over-sizing, which results in excessive fixed fringe benefits and guarantee time. Some level of overtime is, therefore, needed to minimize costs.

Many transportation managers are finding it increasingly difficult to schedule optimal levels of overtime from their operators. As noted above, operators who are married and/or parents generally have less flexibility in their personal schedules and are less willing to work extended hours. The long-term impact of this phenomenon may be higher operating cost per unit of service delivered.

- **Benefits costs:** With more employees from households with two wage earners, employees may desire less benefit coverage if similar coverage can be obtained through a spouse's employer. Transit properties with "cafeteria" benefit plans may be able to provide less fringe benefits coverage, resulting in lower costs.

- **Training:** Expansion of transit service resulting from the opening of a new fixed guideway line or the extension of an existing line results in significant training requirements. These costs usually precede revenue service by between one to six months, depending on the requirements of each position. Exhibit 3 summarizes the advance training requirements assumed by WMATA for bus and heavy rail positions.
- **Termination lapses:** Turnover in personnel is an inevitable occurrence in transit operations. Terminations result from retirement, dismissal with cause, promotion, and other factors. Typically, budgeted positions will assume a predetermined lapse rate. Exhibit 4 summarizes the termination lapse rates assumed by WMATA for bus and heavy rail positions.

PRINCIPLE 3: ADDRESS ALL FUNCTIONAL RESPONSIBILITIES OF THE TRANSIT PROPERTY

Many transit properties are not responsible for funding and staffing all of the functions required for transit operations and capital development. The reasons for such arrangements is often the result of institutional and organizational peculiarities of each property. Some examples of this situation include:

- **City transit departments:** Transit systems that are departments of city government frequently rely on the city for various administrative services such as bookkeeping, accounts payable and receivable, payroll, personnel, legal counsel, risk management, police and security, and facility maintenance.
- **Functions provided by other agencies:** Independent transit properties may be provided functions through agreement with other agencies. Examples include police services, snow removal.

The construction and operation of a fixed guideway system will typically result in significant increases in the demand for such outside services. Unless there is clear and documented reason to believe that the responsible outside agencies will increase funding and staffing, the financial analysis (and, thus, the O & M cost model) should include the costs for expanding such functions. In the evaluation of alternatives, the various functions performed by outside agencies should be identified.

PRINCIPLE 4: FOCUS ON MAJOR COST COMPONENTS

The level of precision (i.e., detail) in O & M cost models should be consistent with the relative importance of each functional area being modeled. In this regard, bus O & M cost models should address the following types of driving variables:

EXHIBIT 3

EXAMPLE OF TRAINING REQUIREMENTS ASSUMED OPERATING BUDGET

Department/Office/Branch/Position	Training Requirement
Bus Service	
Operators	1.0 months
Mechanics	0.5 months
Rail Transportation	
Station Manager	1.5 months
Train Operator	3.0 months
Train Supervisor	3.0 months
Station Supervisor	2.5 months
Operations Control Center Supervisor	4.0 months
Rail Car Maintenance	
Mechanics	3.0 months
Rail Systems Maintenance	
Automatic Train Control Technician	3.5 months
Automatic Fare Collection Technician	1.5 months
Communications Technician	1.5 months
Power Electrical Mechanic	1.5 months
Computer Technician	1.5 months
Transit Police and Security	
Transit Police Officers	6.0 months
Special (Security) Police Officers	1.5 months
Facilities Maintenance	
Mechanics, Equipment Operators	1.5 months

Source: Washington Metropolitan Area Transit Authority, FY 1992 General Manager's Budget, Vol. 1, Financial Program and Summaries

EXHIBIT 4

EXAMPLE OF ASSUMED PERCENTAGE OF WAGES AND SALARIES NOT TO BE INCURRED IN OPERATING BUDGET DUE TO VACANCIES

Department/Office	Salaried	Union
Independent (reporting to Genl Mgr) except Procurement	3.32%	n/a
Procurement	6.63%	2.79%
Finance	3.43%	2.79%
Administration	6.63%	2.79%
Design & Construction except Construction & Facil Maint	3.43%	n/a
Construction	7.50%	n/a
Facilities Maintenance	3.37%	5.37%
Bus Service except Bus Operators	2.08%	0.61%
Rail Service except Rail Operators & Station Managers	5.20%	4.92%

Source: Washington Metropolitan Area Transit Authority, FY 1992 General Manager's Budget, Vol. 1, Financial Program and Summaries

- **Peak vehicles, by type of vehicle:** drives facilities maintenance and some vehicle maintenance costs, can be applied as a surrogate for system size in projecting general administrative costs
- **Revenue hours, peak and off-peak:** drives operator costs
- **Vehicle-miles, by type of vehicle:** drives vehicle maintenance and claims costs
- **Number of maintenance facilities:** drives facilities maintenance and some front-line supervision costs
- **Park-and-ride lots/spaces:** drives some facilities maintenance costs
- **Route-miles of busway:** drives some facilities maintenance costs if the transit property is responsible for maintaining busways

For bus systems the emphasis should be placed on the following functions (numbers in parentheses refer to Section 15 function codes):

- **(031) Revenue vehicle operators:** This function accounts for approximately half of total bus costs. Given significant service changes could result when fixed guideway systems are implemented (e.g., conversion from line-haul to feeder service, changes in peak-to-base ratio, changes in interlining) it is likely that changes in labor productivity will occur as well. The sophistication of the model use to address these changes will depend on the extent of change.

Resource build-up equations should apply revenue hour projections from the travel demand analysis to project pay hours and operator wages. One structure for such equations is as follows:

$$\text{Operator Pay Hrs} = \text{Revenue Hrs} \times \frac{\text{Platform Hrs}}{\text{Revenue Hr}} \times \frac{\text{Sched Pay Hrs}}{\text{Platform Hr}} \times \frac{\text{Act Pay Hrs}}{\text{Sched Pay Hr}}$$

or (if less detailed payroll data is available)

$$= \text{Revenue Hrs} \times \frac{\text{Platform Hrs}}{\text{Revenue Hr}} \times \frac{\text{Actual Pay Hrs}}{\text{Platform Hr}}$$

where

- Platform hours/revenue hour addresses impacts of deadheading, report time, turn-in time, meal time
- Scheduled pay hours/revenue hour addresses premiums for overtime, intervening time, and spread time
- Actual pay hours/scheduled pay hours addresses extraboard management and staffing of open runs (runs for which the

scheduled operator is not available due to being sick or injured, in training, on vacation, or on other assignment)

$$\text{Operator Wages} = \text{Operator Pay Hrs} \times \frac{\text{Average Wage}}{\text{Pay Hr}}$$

$$\text{Number of Operators} = \text{Actual Pay Hrs} \times \frac{\text{Operators}}{\text{Actual Pay Hrs}}$$

$$\text{Wage-Related Fringes} = \text{Operator Wages} \times \frac{\text{Fringe \$}}{\text{Hourly Wage \$}}$$

[Includes FICA and pension costs]

$$\text{Headcount-Related Fringes} = \text{Number of operators} \times \frac{\text{Fringe \$}}{\text{Operator}}$$

[Includes medical and life insurance premiums and workers compensation costs]

Transit properties with a high peak-to-base ratio should model peak and off-peak platform hours separately. The ratio of platform hour/revenue hour will be higher for peak periods than for off-peak period and will vary by garage. The ratios of scheduled pay hour/platform hour and actual pay hour/scheduled pay hour will also vary by garage. The garage-to-garage variance typically results from different relative amounts of open work which is, in turn, affected by scheduling and runcutting practices and absenteeism (related to average seniority of operators at each garage).

Transit properties expecting a significant change in the bus service profile by time of day or significant changes in union work rules should consider applying an operator/extraboard model to project the wage and fringe benefit costs for bus operators. This type of model addresses the following key factors:

- **Mix of run types, by time of day:** This includes the number of straight, split (or "swing"), and tripper runs during the early AM, AM peak, midday, PM peak, and evening periods
- **Labor productivity for each type of run:** This includes the following measures, ideally for each operating garage:
 - Platform hours/revenue hour
 - Scheduled pay hours/platform hour
 - Actual pay hour/scheduled pay hour
- **Analysis of open runs:** This includes analysis of frequency distributions of open work on any given day.

- **Work rule-related costs:** This includes premiums for intervening time and spread time for split shifts, guarantee time
- **Mix of full-time and part-time operators:** This includes constraints on the application of part-time employees, e.g., maximum run length, maximum hours worked per week.
- **Absenteeism:** including controllable (sick, injury) and uncontrollable (holiday, vacation) absenteeism
- **Attrition:** including terminations with cause and promotion to other positions

Operator/extraboard cost analysis involves determining the optimal operating staffing level by considering the trade-offs between:

- **Employing too few operators:** which results in excessive overtime and variable fringe benefit costs
 - **Employing too many operators:** which results in excessive guarantee time and fixed fringe benefit costs
- **Revenue vehicle maintenance wages and fringes:** The model should address the different maintenance requirements of each subfleet of buses (e.g., intensity of required maintenance labor effort measured in terms of mechanic labor hours per 1,000 vehicle-miles, the impacts of an aging fleet and the introduction of new vehicles, and the implications of new maintenance facilities.
- **Other labor costs:** The model should project front-line supervisory staff based on actual span of control and deployment of these personnel. For example, the following approaches may be appropriate:
- **Bus street supervisors:** based on total platform hours, peak vehicles, number of garages
 - **Garage foremen:** based on the number of mechanics

Administrative personnel are best projected based on a detailed review of the entire organization. Exhibit 5 is an analysis of bus-related staff (including salaried and hourly employees) in a recent cost model.

- **Fuel:** The model should address differences in fuel consumption of each subfleet of buses, the implications of new vehicles (particularly pollution control mandates, and changes in operating speed resulting from new service plans (e.g., a shift from line-haul to feeder service may lower average speed).

- **Parts:** If maintenance work order data is available, the model should address differences in parts consumption of each subfleet of buses and the implications of new vehicles. Particular care should be taken in accounting form costs for major component overhaul costs (e.g., engines, transmission, and differentials).

Exhibit 6 presents a summary of labor productivity and unit cost coefficients used in a recent bus O & M cost model that was applied at the route level. The model included coefficients that were sensitive to time of day, type of vehicle, and operating garage.

Rail O & M cost models should address the following types of driving variables:

- **Peak vehicles, by type of vehicle:** drives some vehicle maintenance costs and can be applied as a surrogate for system size
- **Revenue train hours, peak and off-peak:** drives operator costs
- **Revenue vehicle miles, by type of vehicle:** drives vehicle maintenance and propulsion power costs
- **Route-miles: subway, surface, aerial:** drives track and structures costs
- **Stations: subway, surface/aerial:** drives station, fare collection system, automatic train control, and communications maintenance costs, station manager costs
- **Maintenance facilities/yards:** drives facilities maintenance and electricity costs
- **Park-and-ride lots/spaces:** drives facilities maintenance costs
- **Annual passengers:** drives fare collection costs

For rail systems the emphasis should be placed on the following functions:

- **Revenue vehicle operators:** The number of operators should be consistent with the level of service provided as well as additional requirements for yard operations and other ancillary functions. To the extent that bus and rail operators will be subject to the same labor agreement, the labor productivity for both modes should be consistent. If there are projected to be variances, the reasoning for such variances should be documented.
- **Station operations:** If stations are manned, then costs should be included for station agents. Specific attention should be given to staffing levels consistent with the level of responsibility of the agents (e.g., if agents manually collect fares, then sufficient numbers of agents should be assumed during peak periods).

EXHIBIT 5

EXAMPLE OF BUS TRANSIT STAFFING ASSUMPTIONS IN O & M COST MODEL

POSITION	JOB CODE	SALARY		FY89 FTE's
		WITHOUT BENEFITS	SALARY (1) WITH BENEFITS	
=====				
OVERHEAD LABOR COSTS ALLOCATED TO TRANSIT OPERATIONS (FUND 1628):				
ADMINISTRATION	600	NA	\$858,840	NA
MARKETING	601	NA	\$1,983,621	NA
FISCAL RESOURCES	602	NA	\$3,360,005	NA
HUMAN RESOURCES	609	NA	\$1,398,238	NA
BUS OPERATIONS BUDGET UNIT 0604:				
ENGINEERING SERVICES				
Transit Foreperson	4100.01	\$39,824	\$53,857	2
Advance Clerk Typist	4100.02	\$19,543	\$25,241	2
Clerk Typist	4100.03	\$21,422	\$27,669	2
Engineering Technician II	4100.04	\$34,493	\$44,551	2
Senior Mechanical Engineer	4100.05	\$57,631	\$74,436	2
Assistant Mechanical Engineer	4100.06	\$38,683	\$49,963	2
Division Maint. Supt.	4100.07	\$50,943	\$65,798	2
				14
MATERIAL CONTROL				
Parts Foreperson	4102.01	\$39,711	\$53,705	1
Parts Clerk - Bus	4102.02	\$33,043	\$44,688	36
Buyer Assistant	4102.03	\$47,830	\$61,777	2
Supervising Clerk	4102.04	\$28,342	\$36,606	1
Clerk Typist	4102.05	\$20,025	\$25,864	3
Inventory Control Assistant	4102.06	\$22,355	\$28,874	3
Vehicle Parts Manager	4102.07	\$55,070	\$71,129	1
Vehicle Parts Supervisor	4102.08	\$49,755	\$64,264	5
				52
AGNEWS OVERHAUL & REPAIR				
Overhaul Foreperson	4103.01	\$39,824	\$53,858	3
Mechanic G	4103.02	\$34,342	\$46,445	20
Mechanic	4103.03	\$34,552	\$46,728	22
Paint & Body Foreperson	4103.04	\$39,824	\$53,857	1
Paint & Body Repairperson	4103.05	\$36,838	\$49,820	13
Support Mechanic	4103.06	\$33,991	\$45,969	3
Service Mechanic	4103.07	\$31,679	\$42,842	1
Service Worker	4103.08	\$30,532	\$41,291	3
Facilities Worker	4103.09	\$25,852	\$34,962	2
Upholsterer	4103.10	\$37,155	\$50,249	4
Maintenance Superintendent	4103.11	\$55,070	\$71,129	1
Clerk Typist	4103.12	\$21,422	\$27,669	1
Account Clerk I	4103.13	\$21,422	\$27,669	1
Transit Maint. Supervisor	4103.14	\$47,326	\$61,126	3
Vehicle Maint. Scheduler	4103.15	\$32,886	\$42,475	2
				80

Source: Manuel Padron & Associates, Tasman Corridor Alternatives Analysis, Operating & Maintenance Methodology Report, prepared for Metropolitan Transportation Commission and Santa Clara County Transportation Agency, April 1990.

EXHIBIT A-6

EXAMPLE OF O & M COST MODEL COST DRIVERS AND KEY LABOR PRODUCTIVITY AND UNIT COST VALUES

	System wide	Garage/Type of Service									
		Alameda	Platte			East Metro	Boulder		Longmont		
			Peak Mall	Off-Peak Mall	Other		City	Intercity	City	Intercity	
DRIVING VARIABLES											
Peak Trips X Mall	598	155	0	0	285	114	0	0	36	0	8
Peak Vehicles	601	143	5	13	176	162	30	50	11	11	11
Platform Hours											
Peak	673,978	151,223	20,344	0	201,014	190,041	37,761	50,364	12,165	11,066	
Off-Peak	1,164,318	215,952	0	56,979	385,343	347,200	76,478	51,291	18,588	12,487	
Total	1,838,296	367,175	20,344	56,979	586,357	537,241	114,239	101,655	30,753	23,553	
Vehicle-Miles											
Articulated	2,290,000	0	0	0	818,100	1,471,900	0	0	0	0	0
Double Deck	23,200	0	0	0	0	0	23,200	0	0	0	0
Handyride Van	133,700	110,500	0	0	0	0	0	0	23,200	0	0
Intercity	3,964,400	0	0	0	813,300	0	0	3,151,100	0	0	0
Mall Electric	21,700	0	5,709	15,991	0	0	0	0	0	0	0
Mall Diesel	287,300	0	75,590	211,710	0	0	0	0	0	0	0
Medium Transit	1,143,200	35,900	0	0	0	0	897,200	0	118,978	91,122	
Medium Transit w/Lift	405,600	194,200	0	0	0	0	76,400	0	76,449	58,551	
Suburban	775,100	434,500	0	0	340,600	0	0	0	0	0	0
Transit w/Lift	18,227,600	4,707,400	0	0	6,903,800	5,866,900	637,500	0	63,425	48,575	
Total	27,271,800	5,482,500	309,000	81,300	8,875,800	7,338,800	1,634,300	3,151,100	282,052	198,248	
PRODUCTIVITY FACTORS											
<u>Operator Productivity</u>											
Pk pay/platform hr	1.2053	1.1732	1.2071	n/a	1.2071	1.1737	1.1261	1.4635	1.1325	1.3235	
Ofpk pay/platform hr	1.1085	1.1103	n/a	1.1013	1.1013	1.1043	1.0877	1.1883	1.1287	1.2114	
Act/sched pay hr	1.0239	1.0196	1.0196	1.0196	1.0196	1.0196	1.0380	1.0571	1.0380	1.0571	
Avg operator wage/hr	\$12.3025	\$12.4236	\$12.3762	\$12.3762	\$12.3762	\$12.2066	\$12.1336	\$12.0924	\$12.4508	\$12.2696	
Annual hours/Operator	1825.52	1791.10	1897.31	1897.31	1897.31	1898.38	1773.89	1303.27	1830.53	2355.31	
Op fringe/comp abs	45.74%	46.86%	47.26%	47.26%	47.26%	44.12%	43.78%	43.78%	43.78%	43.78%	

Source: KPMG Peat Marwick, Working Paper No.2 (Revision 3), Development of Fully-Allocated Cost Model in Compliance with UMTA Guidelines, prepared for Denver Regional Transportation District, August 1989.

- **Vehicle maintenance labor:** The cost model should separately address routine maintenance requirements and occasional corrective maintenance campaigns. The financial analysis should include provision for routine rehabilitation and replacement costs, either within the O & M cost model and/or in separate capital reinvestment analysis.
- **Police and Security:** This includes the costs for the following functions:
 - Patrol of trains, stations, park-and-ride lots, and other passenger facilities
 - Investigative and administrative functions
 - Security of transit property facilities, including shops and administrative buildings
- **Other labor:** Exhibit 7 is an analysis of projected light rail staff for the same transit property described in Exhibit 5. Note that many new light rail positions are based on current bus positions.
- **Non-vehicle maintenance wages and fringes:** The cost model should address labor productivity for the following maintenance functions:
 - Signals/revenue vehicle movement control
 - Communications
 - Traction power
 - Track and structures
 - Fare collection equipment
 - Buildings and other facilities
- **Non-vehicle maintenance parts and supplies:** The models should separately account for parts and supplies for each of the non-vehicle maintenance functions noted above. Particular care should be made to assure that routine capital rehabilitation and replacement costs are included in the financial analysis, either within the cost model (in the form of preventative maintenance) and/or in a separate capital reinvestment analysis.
- **Electricity:** O & M cost models should separately address traction power and other uses because of different demand and usage characteristics and associated different tariff structures applied by the electric utilities. Depending on the structure of the local electric power tariff, the model should separately address the following power requirements:

- Propulsion power
- Station power
- Chiller plants (subway stations)
- Yards and ancillary facilities

In the case of extensions to existing rail systems, the models should address energy conservation and management schemes currently underway or proposed to minimize electric utility costs.

PRINCIPLE 5: APPLY CONSISTENT LEVEL OF SERVICE INFORMATION

The operating statistics applied in O & M cost models should meet the following internal consistency requirements:

- **Consistency with travel demand analysis assumptions:** The routes, service frequency, average operating speed, peak vehicle, and train length assumptions implicit to the travel demand analysis should be used as the driving variables in the O & M cost models. This information should be used to develop projections of annual revenue hours and vehicle miles.
- **Consistency with construction schedules:** The annual service statistics in O & M cost projections should reflect service adjustments consistent with projected schedules for the opening of new fixed guideway segments, transfer centers, park-and-ride lots, maintenance garages, and other facilities. This includes both the operation of fixed guideway segments and feeder bus routes.

PRINCIPLE 6: APPLY PEER TRANSIT PROPERTY EXPERIENCE

Unless the O & M cost models will be applied in the context of expanding an existing mode, the models will need to reflect the combined experience of engineering and planning analysis and judgement and the experience of similar transit operations at other transit properties. While there is much to be learned from the experience of peer transit properties, operational and cost data from such sources should be applied with care. No two transit systems are identical, regardless of type of service and equipment operated. The following discussion highlights some of the important considerations in applying peer transit property data and addresses common pitfalls observed by FTA and others:

- **Rail transit general and administrative (G & A) ratio:** In some O & M cost models and operating budgets the ratio of G & A cost allocated to the new rail mode to rail operating and maintenance cost is frequently much lower than the similar ratio for the existing bus system. The argument typically made is that the additional positions hired for the new rail system will be limited to management and supervisory positions directly related to rail operations.

EXHIBIT 7

EXAMPLE OF LIGHT RAIL TRANSIT STAFFING ASSUMPTIONS IN O & M COST MODEL

POSITION	JOB CODE	SALARY w/o BENEFITS	SALARY w/ BENEFITS	FY89 FTE's
=====				
OVERHEAD LABOR COSTS ALLOCATED TO TRANSIT OPERATIONS (FUNO 1628):				
ADMINISTRATION	600	NA	\$73,811	NA
MARKETING & COMMUTER SERVICES	601	NA	\$170,477	NA
FISCAL RESOURCES	602	NA	\$288,767	NA
HUMAN RESOURCES	609	NA	\$120,168	NA
LIGHT RAIL OPERATIONS (B.U. 0607):				
LRT ADMINISTRATION:				
Ass't. General Manager	644001	\$70,067	\$88,474	1
Secretary I	644002	\$25,406	\$32,080	1
Clerk Typist	644003	\$21,070	\$26,605	3
Account Clerk I	644004	\$20,407	\$25,768	2
Light Rail Ops. Spec. (Safety)	644005	\$57,976	\$73,206	1
Management Analyst	644006	\$44,280	\$55,912	0
Admin. Support Officer	644007	\$37,326	\$47,132	1
Systems Engineer	644008	\$55,400	\$69,954	1
Light Rail Warranty Coordinator	644009	\$36,796	\$46,462	1
OPERATIONS:				
Supt. of LRT Operations	644101	\$51,782	\$66,027	1
Supervisor of Rail Control	644102	\$46,779	\$59,648	11
Rail Operator	644103	\$32,521	\$44,303	35
Dispatcher	644104	\$34,678	\$47,242	4
Transportation Instructor	644105	\$42,752	\$54,513	0
VEHICLE MAINTENANCE:				
Equipment Superintendent	644201	\$54,146	\$68,733	1
Vehicle Maint. Supervisors	644202	\$49,272	\$62,546	6
Maintenance Scheduler	644203	\$33,928	\$43,068	0
Maintenance Instructor	644204	\$44,708	\$56,752	1
Maint. Specialist (Trolleys)	644205	\$57,976	\$73,595	1
Parts Supervisor	644206	\$46,949	\$59,597	1
Facilities Maint. Representative	644207	\$33,043	\$41,945	1
Electronics Technician	644208	\$38,052	\$51,264	2
Paint, Body & Uphol. Worker	644209	\$38,884	\$52,385	1
Electro Mechanic	644210	\$38,615	\$52,023	12
LRV Service Worker	644211	\$30,407	\$40,965	11
Facility Worker	644212	\$28,571	\$38,491	2
Foreperson	644213	\$41,403	\$55,779	5
Parts Clerk	644214	\$32,407	\$43,659	4
WAY, POWER & SIGNALS:				
Supt. of Way, Power & Signals	644301	\$58,975	\$73,913	1
Supervisor of Power	644302	\$46,382	\$58,131	1
Supervisor of Signals	644303	\$52,837	\$66,221	1
Supervisor of Track Maint.	644304	\$46,542	\$58,331	1
Supervisor of Station & Way	644305	\$40,187	\$50,366	1
Overhead Line Worker	644306	\$41,471	\$55,542	3

Source: Manuel Padron & Associates, Tasman Corridor Alternatives Analysis, Operating & Maintenance Methodology Report, prepared for Metropolitan Transportation Commission and Santa Clara County Transportation Agency, April 1990.

It is possible, however, that G & A expenses will increase proportionately to the increase in direct operating costs (vehicle operations, vehicle maintenance, and non-vehicle maintenance) for the combined bus and new rail transit system.

- **Adjustments for local conditions:** O & M cost models should account for local conditions which make the planned transit system different from peer systems. These conditions include the following:
 - **Labor cost factors:** Most of these factors are embodied in the labor contract for hourly employees. This includes the following cost components:
 - **Wages:** including wage per hour, scheduled raises and lump sum payments, and progression from entry level to top wage rate (which, along with average seniority, determines average wage rate)
 - **Fringe benefits:** including both wage-related benefits (e.g., pension) and headcount-related benefits (e.g., medical, life insurance)
 - **Work rules:** especially for operators, this includes premium pay for report time, layover time, meal time, intervening time, spread time, turn-in time, travel time, guarantee time, training and other premiums.
 - **Unit price factors:**
 - **Diesel fuel:** costs per gallon for diesel fuel
 - **Electricity:** costs per kilowatt hour. Local tariffs will determine the formula for determining electricity costs. The formula may address such components as the number of connection points, peak kilowatt loads, and types of use (e.g., traction power versus lighting or other uses).
 - **Operational factors:**
 - **Staffing practices:** Because of heavy passenger loads and union contract requirements, some properties staff trains with more than one operator:
 - **Conductors:** Some heavy rail properties utilize conductors to open and close doors, make train announcements, and collect fares.
 - **Additional operators:** Some light rail properties utilize an operator in each car when they are trainlined.

- **Climate:** Adverse weather conditions, particularly winter weather, can result in higher costs. For example, track tamping on ballasted track is likely to be a higher cost for northern rail systems experiencing freeze-thaw cycles than for southern and southwestern systems.
 - **Deadheading:** The location of bus garages, and the distance of garages from the beginning of revenue service on routes will vary from property to property.
 - **Technology factors:** The sophistication of overall systems and important components and subsystems can have important impacts on costs. For example:
 - **Traction motor controllers:** On rail transit cars, cam controllers are typically less efficient than "chopper" controllers. As a result, otherwise identical cars in identical operating conditions may consume less net electrical power, and have less operating cost, if equipped with chopper controllers.
 - **Automatic train control:** Less complicated rail systems can operate effectively without expensive ATC systems. However, as train frequencies increase and the rail network becomes more complicated (e.g., branching and merging routes), ATC becomes more important. ATC systems can centralize and reduce the number of train control personnel who might otherwise be deployed in the field (at interlocking towers, for example). At the same time, ATC systems require considerable maintenance effort which may offset such savings.
- **Accounting for contracted services when using peer labor productivity data:** Properties that contract out certain functions may have a lower ratio of in-house employees per unit of service than properties that do not contract out. Care should be taken that such lower labor productivity ratios are not inappropriately used in making comparisons or in calibrating O & M cost models. The following functions may be performed in-house, but are frequently contracted out:
 - **Vehicle maintenance:**
 - **Component rebuild:**
 - **Bus:** engines, transmissions, differentials, alternators
 - **Rail:** traction motors, fan and pump motors, other components

- Heavy maintenance (accident repairs)
- Tire maintenance
- Fluid analysis (engine oil, transmission fluid)
- **Non-vehicle maintenance:**
 - Snow removal
 - Roof repairs
 - Landscaping
 - Equipment repair
 - Garage and shop equipment repair
 - General building repair (plumbing, electrical, painting, concrete repair)
 - Elevator and escalator maintenance
 - Communications equipment repair
 - Service vehicle repair
 - Refuse collection
 - Station cleaning
- **General administration:**
 - Fare revenue collection and counting
 - Proof-of-payment (self-service) fare inspection
 - Ticket sales
 - Security police at facilities
 - Police patrol on vehicles & at passenger stations/ terminals
 - Outside legal counsel
 - Claims adjusting
 - Transfer printing and other reproduction
 - Custodial services

- **Overly optimistic scenarios:** In planning for lower cost light rail systems, there may be a temptation to structure O & M cost models based on the best (lowest cost) aspects of similar systems, reflecting an assumption that "we'll be better". While there may be considerable justification for such an approach, planners need to understand why various peer properties have certain cost characteristics. Examples of these peculiarities include:
 - **Light rail operator staffing:** Light rail transit in Boston and San Francisco have relatively higher vehicle operation costs per vehicle mile because all vehicles should be manned, regardless of train length, per union work rules.
 - **Track maintenance:** New California light rail systems track maintenance staffing is low compared to northern and eastern rail systems because of relatively infrequent service, mild climate and lack of freeze-thaw cycle, and contracting out of some track maintenance functions.
 - **Transit police:** The SCRTD Blue line has an intensive level of contract police protection because of relatively high crime rates in the communities through which the line runs.
- **Vehicle maintenance data from peers during warranty period:** Care should be taken to consider maintenance activities that might be undertaken by the vendor during the initial operation of new vehicles. Such initial experience (in terms of labor productivity and unit cost per vehicle-mile) may not be representative of longer-term cost experience.

PRINCIPLE 7: APPLY READILY AVAILABLE INFORMATION

O & M cost models should be based, to the greatest extent possible, on readily available information. There are two reasons for this:

- O & M cost models should be part of the overall budgeting process applied by management
- FTA and other reviewers should be able to easily confirm the sources of information used in structuring the model

The most important sources of information that will be available, discussed further in the sections below, include the following:

- **Budgets and budgeting data:** Ideally, the O & M cost models should be structured based on the most detailed budgeting data (i.e., line item budgets which identify individual positions and major components of non-personnel cost)

- **Peer transit system data:** The cost experience of similar transit properties may be very useful (subject to the limitations noted above). Among the sources of peer data are the following:
 - Section 15 data
 - APTA operating data
 - Peer property budgets
 - Peer property cost models

It is also important that driving variables in the O & M cost model (e.g., peak vehicles, vehicle-hours, and vehicle-miles) be readily available. This information should be derived from routine operations planning or long-range planning procedures. For example:

- Revenue hours, revenue vehicle-miles, and peak vehicles are typically derived from network analyses as part of a long-range urban transportation planning process.
- Platform hours (which include revenue hours plus deadheading and contract-mandated pay hours for report time, turn-in time, intervening time and similar time) may be derived either through a more detailed runcutting-type analysis conducted by operations planning staff or may be derived by factoring the revenue hour projection, based on systemwide average ratios of platform-hours per revenue hour.

PRINCIPLE 8: PROVIDE FULLY-ALLOCATED COSTS FOR COST-EFFECTIVENESS ANALYSIS

FTA planning guidelines require that alternatives be evaluated on the basis of equivalent annual costs per incremental passenger. Such costs should be based on fully-allocated operating cost. For the purposes of a cash flow analysis, however, it may be more appropriate to consider incremental costing approaches, particularly for near-term operations.

Fully-allocated operating cost analysis is based on the assumption that in the long-term various administrative and overhead costs are directly related to the quantity of service provided. This assumption is strongly supported by the cost experience of transit properties that have implemented new fixed guideway systems. There has, however, been instances where incremental extensions to existing fixed guideway systems have not resulted in proportionate increases to overhead. This has been demonstrated by recent expansions at WMATA and San Diego Trolley. To some extent, many overhead costs are more the result of responding to local Board of Director policy and local, state, and federal legislative and regulatory mandates and are not directly a function of the quantity of service provided.

Thus, it may be correct to project costs on an incremental basis in some applications. However, from the standpoint of comparing alternatives (and, in the case of FTA review, determining whether an alternative meets national cost-effectiveness standards), fully-allocated costs should be considered.

PRINCIPLE 9: STRUCTURE FOR SENSITIVITY ANALYSES

Financial analyses in Draft Environmental Impact Statements and in detailed financial analyses of the Locally Preferred Alternative should address the uncertainty of various inputs and the extent such risks may affect the financial capacity of the financing entity to undertake the transit investment. The O & M cost model should be applied in a sensitivity analysis to consider the uncertainty in the operating cost component of the overall financial plan.

Sensitivity analyses should establish a lower and upper bound for the operating cost projections by applying lower and upper values for the following cost components:

- **Inflation:** including baseline inflation rates and inflation of major cost components that may significantly differ from the baseline rate, e.g., hourly labor, fringe benefits, fuel, and electricity
- **Labor productivity:** particularly for operators (e.g., pay hour per platform hour) and mechanics (e.g., mechanic hours per 1,000 vehicle miles)
- **Fuel consumption:** in terms of mile per gallon (e.g., in response to an older or younger fleet or the introduction of alternative fuel buses)

PRINCIPLE 10: DOCUMENT MODEL THEORY AND APPLICATIONS

The O & M cost model should be sufficiently documented to permit simple verification of the assumptions and sources of information used. All calculations should be clear and no calculations should be hidden. Intermediate calculations, not required in final published reports, should be documented in subsidiary technical memoranda. Every equation and every coefficient in each resource build-up equation should be clearly referenced, including the source of the information used.

Specific recommendations regarding documentation of key assumptions are included in the last section of this appendix.

III. SOURCES OF INFORMATION

INTRODUCTION

This section addresses the potential sources of information that might be used to structure an O & M cost model. These sources include:

- Transit property budget
- Peer property Section 15 data
- Peer property APTA data
- Peer property O & M cost models, budgets, and other sources of data

Each of these sources is addressed in the discussion below.

TRANSIT PROPERTY BUDGETS

One point of departure in structuring an O & M cost model is the current (or projected) detailed operating budget of the transit property. This source can provide important information for both the existing transit system and for proposed new technologies (e.g., labor unit costs). Budgets have the following advantages as a data source:

- **Detailed staffing data:** Budgets can provide important information regarding the staffing throughout the organization. In the case of multi-modal organizations, the budgets may provide some information regarding the allocation of staff by mode. This information, along with the assumed level of service provided (e.g., vehicle-miles, revenue hours) can yield labor productivity values.
- **Identification of contracting:** Budgets can clearly identify the level of contracting. This is important because low staffing levels may actually result from high levels of contracting.
- **Clear documentation of assumptions:** Well prepared budget documents may provide a concise source of information regarding assumptions of future financial conditions. These assumptions can include:
 - Inflation: including hourly labor, salaried labor, hourly fringes, salaried fringes, claims, fuel, parts, electricity
 - Work rule changes (e.g., changes in use of part-time operators)
 - Levels of service (e.g., peak vehicles, vehicle-miles, platform-hours, hours of operation)

- Absenteeism and other labor productivity factors
- Major maintenance campaigns
- **Accepted internally:** Quite often the budget document is accepted as the authoritative source of financial information in a transit agency. For a variety of reasons, other references, such as Section 15 reports and planning documents, may not be accepted by management, governance boards, and outside agencies as complete or accurate.

Despite these advantages, there are some limitations in the applicability of budgets as the source of information for structuring O & M cost models:

- **Difficult to compare to peers:** Most transit properties structure their operating budgets according their internal organizational structure. Every transit property is organizationally different, as a result of governance board policy, local laws and regulations, types of service offered, relationships with local governments, and the skills and experience of senior managers. Such differences imply that comparisons between peers should be done with care.
- **May reflect only historical trends:** It is possible (indeed, likely) that future conditions will be different than the past, resulting in changes in labor productivity and unit costs. Examples of such future changes include:
 - New union contract with associated increases in wages and changes in work rules
 - Aging vehicles, resulting in increased maintenance and fuel costs
 - New vehicles, resulting in reduced maintenance and fuel costs

SECTION 15 DATA

The Section 15 Reporting System evolved from the transit industry-initiated Project FARE (Uniform Financial Accounting and Reporting Elements). The system involves the reporting of financial and operating data according to a standard chart of accounts on a standardized set of reporting forms. FTA has undertaken several actions to assure that the data submitted are accurate, uniform in definition, and timely:

- The data to be provided is defined by FTA in a users guide
- Transit property employees responsible for preparing the reports are trained by FTA
- Independent certified public accountants review the submissions
- Contractors to FTA review the data for reasonableness, based on an analysis of trends over time and comparisons to industry standards

The Section 15 data base provides a powerful basis for the analysis of transit operating costs. The most important advantages include:

- **Industry standard:** The common format in reporting aids in making comparisons and computing industry averages
- **Fine level of detail:** Some of the largest transit properties in the country, and those that have received FTA grants for management information systems, report at Level A, which included detailed cost reports for 44 cost functions. This allocation of costs is frequently more detailed than the information found in operating budgets.

Despite these significant advantages, Section 15 data does have the following disadvantages when applied for the purpose of structuring and calibrating operating cost models:

- **Inadequate labor detail:** Section 15 does not provide for much detail in the classification of employees. Only ten categories are available:
 - **Vehicle operations:**
 - Transportation administration
 - Revenue vehicle operator
 - Transportation support
 - **Vehicle maintenance**
 - Vehicle maintenance administration
 - Revenue vehicle inspection and maintenance
 - Vehicle maintenance support
 - **Non-vehicle maintenance**
 - Non-vehicle maintenance administration
 - Non-vehicle maintenance support
 - **General & administrative**
 - Marketing and planning
 - General administration support

This coarse level of detail limits the usefulness of Section 15 data, particularly for rail transit modes, in the following functions:

- **Vehicle operations:**
 - Provides full-time equivalents only and does not separate full- and part-time operators
 - Does not distinguish between other hourly employees (e.g., depot clerks, dispatchers) and salaried employees

- Does not provide the same level of detail by function as the Level A chart of accounts for expenses
- **Vehicle maintenance:** Does not separate the following vehicle maintenance activities:
 - Service and inspection (the preventative maintenance function)
 - Servicing and cleaning
 - Heavy maintenance: which includes both major in-house vehicle overall and rehabilitation functions as well as some corrective maintenance functions
 - Component rebuild (part of the preventative maintenance function, sometimes extensively contracted-out)
 - Paint and body shop (partly preventative and partly corrective maintenance)
- **Non-vehicle maintenance:**
 - Does not separate the following functions (even though the costs for these functions are reported by Level A reporters):
 - Vehicle movement control systems
 - Fare collection and counting equipment
 - Roadway and track
 - Structure, tunnels, and subway
 - Passenger stations
 - Operating station buildings, grounds, and equipment
 - Garage and shop buildings, grounds, and equipment
 - Communication systems
 - General administration buildings, grounds, and equipment
 - Operation and maintenance of electrical power facilities
 - Does not distinguish between mechanics and salaried staff (as in the case of vehicle maintenance)
- **General administration:**
 - Does not distinguish among the 16 functions reported by Level A reporters.

- Does not distinguish between non-supervisory and front-line supervisory positions, particularly for the following functions, which typically involve significant levels of manpower:
 - Ticketing and fare collection
 - System security
 - Purchasing and stores
- **Inadequate breakdown of labor costs:** Section 15 expense forms separate labor costs for each function into **only two object classes:**
 - Operators' wages
 - Other salaries and wages

Hence, except for operators, there is no distinction between costs for management, supervisory, administrative, support, and labor personnel.

- **No information regarding local cost factors:** Section 15 data does not report local cost factors that are likely to differ between transit properties, such as:
 - Wage rates (e.g., top hourly wage, average hourly wage, mix of full-time and part-time operators)
 - Runcutting measures (e.g., mix of straight, split, and tripper runs)
 - Fringe benefits (e.g., employer contributions as percentage of wage or per employee for medical/insurance, pension)
 - Work rules (e.g., specific provisions that result in premium hours)
- **No information regarding physical differences:** Section 15 data does not describe the physical differences between otherwise similar transit properties, e.g., age of fixed plant, technology, climate, passenger loading, fare collection technology
- **Errors in data definitions and reporting:** Recent data is more reliable than earlier data.

PEER PROPERTY APTA DATA

The American Public Transit Association (APTA) annually publishes Transit Operating and Financial Statistics. The data presented are based on FTA Section 15 reports provided directly by the transit properties, not by FTA. These data have the following advantages:

- **Prompt reporting:** APTA usually publishes annual statistics much sooner than FTA because the data are not subject to the intensive review that FTA

and its contractors undertake to assure completeness, accuracy, and consistency of the data.

- **Concise reports:** Data are presented by transit property, rather than by type of expense or revenue category. Most transit properties are summarized within two to four pages. Data include:
 - Operating revenues, by category
 - Operating expenses, by Level C function, by object class
 - Operating expenses, by mode:
 - by Level C function
 - Total salaries and wages, fringe benefits, services, purchased transportation
 - Service data, including:
 - Directional route miles and miles of track
 - Stations
 - Active, total, and emergency contingency vehicles
 - Vehicles operated in AM peak, midday, PM peak
 - Vehicle operator and total employee equivalents
 - Unlinked passenger trips and passenger-miles
 - Revenue and total vehicle miles
 - Revenue and total vehicle hours
 - Gallons of fuel/kilowatt-hours of electricity
 - Vehicle operator wages, by type of payhour
 - Fringe benefits, by type of benefit.

The primary disadvantage of these data is that since it is not subject to the same level of review as the published FTA Section 15 data, it may include some errors and, as a result, may not be consistent with such published Section 15 data.

PEER PROPERTY O & M COST MODELS

A third important source of operating data is operating and maintenance cost models developed for peer transit properties (and other operating data) which underlie such models. There are many examples of operating cost models that are based on a carefully researched and reasoned set of assumptions.

The key advantages of these previously developed models include:

- **Provides additional data:** Carefully applied, these models provide a large amount of data that may be valid for similar transit systems.
- **Provides an upper and lower bound of key labor productivity and unit cost values:** These models typically span a range of values for important model cost components that could be useful in conducting sensitivity analyses.
- **Reasonableness tests:** The models can serve as a test for reasonable aggregate values of costs per unit of service (e.g., cost per vehicle hour for vehicle operations, cost per vehicle mile for vehicle maintenance)
- **Validation:** O & M cost models which address expansion of existing fixed guideway systems are typically structured based on actual data (prior, current, or future year budgets). The extent to which such information is a valid basis for projections should be addressed, however. For example, the following changes might result in costs that would not be suggested by prior cost experience:
 - Massive expansion in service, involving a significant change in the service plan (i.e., conversion of line haul bus routes to feeder routes), due to changes deadheading and utilization of operator labor)
 - Opening of new maintenance facilities (i.e., investment in new maintenance equipment and provision of improved working conditions may result in increase labor productivity)

There are, however, some important limitations to the application of cost models prepared for other transit properties:

- **Prospective nature:** In the case of proposed new rail transit systems, the models will be untested against actual operations.
- **Contracted maintenance services:** The models may not reveal the implicit assumptions regarding the quantity of work not performed in-house. This may result in inappropriate assumptions of labor productivity.

IV. DESCRIPTION OF O & M COST DATA BASE

INTRODUCTION

The O & M cost data base in Appendix 3 has been assembled to provide a body of information to transit planners that can be useful in structuring and calibrating an O & M cost model for use in alternatives analysis and preliminary engineering. This resource draws upon a broad body of information from the period 1985 through 1990.

SOURCES OF INFORMATION

The data base consists of information from the following sources:

- **Section 15 data base:** The data base contains detailed information, directly from the reporting forms submitted by the transit systems, for 1986, 1987, 1988. This includes data for the following representative transit systems:
 - Light and heavy rail transit properties [Section 15 property identification number indicated in brackets]:
 - Portland/Tri-Met (Oregon) [0008]
 - Massachusetts Bay Transportation Authority/MBTA (Boston) [1003]
 - Niagara Frontier Transportation Authority/NFTA (Buffalo) [2004]
 - New York City Transit Authority/NYCTA [2008]
 - Port Authority Transit Corp/PATCO (Lindenwold, NJ) [2075]
 - Port Authority Trans Hudson/PATH (Newark) [2098]
 - Southeastern Pennsylvania Transp Auth/SEPTA (Phila) [3019]
 - Port Authority Transit/PAT (Pittsburgh) [3022]
 - Washington Metropolitan Area Transit Authority/Wmata [3030]
 - Mass Transit Administration (Baltimore) [3034]
 - Metropolitan Atlanta Rapid Transit Authority/ MARTA [4022]
 - Metro Dade Transportation Admin/MDTA (Miami) [4034]
 - Greater Cleveland Regional Transit Authority/GCRTA [5015]
 - Chicago Transit Authority/CTA [5066]
 - New Orleans Regional Transportation Authority [6032]
 - Bay Area Rapid Transit District/BART [9003]
 - Santa Clara Rapid Transit District/SCCTD (San Jose) [9013]
 - San Francisco Municipal Railway/Muni [9015]
 - San Diego Trolley [9054]
 - Sacramento RTD [9019]
 - Large bus systems (properties including and representative of bus operations in cities considering new rail transit systems):
 - Seattle Metro [0001]
 - Milwaukee County Transit System [5008]
 - Southwestern Ohio Reg Transit Auth (Cincinnati) [5012]

- Metropolitan Transit Commission (Minneapolis) [5027]
 - Suburban Transit Board (Chicago/PACE) [5113]
 - City of Detroit [5119]
 - Dallas Area Rapid Transit/DART [6004]
 - Metropolitan Transit Auth of Harris Co. (Houston) [6008]
 - Via Transit (San Antonio) [6011]
 - Bi-State Development Agency (St. Louis) [7006]
 - Utah Transit Authority/UTA (Salt Lake City) [8001]
 - Regional Transportation District (Denver) [8006]
 - City and County of Honolulu [9002]
 - Alameda Contra Costa Co. Transit/AC Transit (Oakland) [9014]
 - Southern Calif Rapid Transit Dist/SCRTD (Los Angeles) [9021]
 - Orange County Transp District/OCTD (California) [9036]
- Commuter rail properties:
- Massachusetts Bay Transportation Authority (formerly contracted to Boston & Maine Railroad, currently contracted to Amtrak) [1071]
 - Metro-North Commuter Railroad/MNCR (New York) [2078]
 - NJ Transit/NJT [2080]
 - Staten Island Rapid Transit Operating Auth/SIRTOA [2099]
 - Long Island Rail Road/LIRR [2100]
 - Chicago Commuter Rail (Milwaukee Road, Norfolk Southern, Heritage Corridor, and Northern Indiana Commuter Transportation District - Illinois portion) [5118]
 - Illinois Central Railroad/IC (Chicago) [5120]
 - Chicago & North Western/C&NW [5121]
 - Burlington Northern (Chicago) [5122]
 - CalTrain Peninsula Rail Svc (San Jose-San Francisco) [9075]
- **Operating budgets:** Operating budgets for the following large, multi-modal transit properties were included:
- WMATA
 - MARTA
 - Seattle Metro
 - SCRTD
- **Representative O & M cost models:** Several O & M cost models were reviewed and were found to be well prepared and thus useful as peer comparisons. These models included:
- **Motor bus:**
 - MARTA
 - GCRTA
 - Houston

- Austin
 - UTA
 - San Francisco Muni
 - AC Transit
 - WMATA
- **Light rail:**
 - SCCTD (Tasman Corridor)
 - Tidewater Transit
 - Houston
 - Austin
 - UTA
 - Portland Tri-Met
 - SCRTRD-Blue Line
- **Heavy rail:**
 - MARTA
 - GCRTA
 - SCRTRD-Red Line
 - BART
 - WMATA

ORGANIZATION OF THE O & M COST DATA BASE

The O & M cost data base provides a structured summary of key cost components for representative bus and rail transit systems that can be useful in structuring O & M cost models.

The data base is structured around the Section 15 reporting system chart of accounts in a four strata hierarchy. At each stratum, selected Section 15 and previously developed cost model data are provided:

- **Stratum 1 detail:** Costs per unit of service for the four Level R major Section 15 operating functions (noted in parentheses):
 - (010) Vehicle operations costs per vehicle hour
 - (041) Vehicle maintenance costs per vehicle-miles
 - (042) Non-vehicle maintenance costs per peak vehicle (for bus) or per route-mile (for rail)
 - (160) General administration cost per vehicle-mile and as a percentage of the total of vehicle operations, vehicle maintenance, and non-vehicle maintenance

This stratum includes both Section 15 and O & M cost model data. This information could be applied to confirm that component costs (for these four functions) are within a reasonable range.

- **Stratum 2 detail:** Costs per unit of service for selected object classes within each of the four major Section 15 Level R and C operating functions noted above: (function/object classes noted in parentheses):
 - (010/501.01 & 501.02) Operators' wages and fringe benefits
 - (010,041,042,160/501.01 &501.02) Other wages, salaries, and fringe benefits
 - (041/504.01) Fuel and lubricants
 - (041/504.02) Tires and tubes
 - (041/504.99) Other materials and supplies
 - (041/505)Electricity
 - (506)Casualty and liability costs
 - Contract services
 - Other non-labor costs

Only the most significant Section 15 object classes are specifically addressed. This stratum includes both Section 15 and O & M cost model data.

- **Stratum 3 detail:** Costs per unit of service for selected object classes noted above within selected Level A operating functions:
 - (010) Vehicle operations:
 - (011) Transportation administration
 - (012) Revenue vehicle movement control
 - (021) Scheduling of transportation operations
 - (031) Revenue vehicle operation
 - (041) Vehicle maintenance:
 - (041) Maintenance administration
 - (051,061,062,071) Servicing, inspection and maintenance of revenue vehicles (including routine maintenance, accident repairs, and vandalism repairs)
 - (081,091) Servicing, inspection and maintenance of service vehicles
 - (042) Non-vehicle maintenance:
 - (042) Maintenance administration - non-vehicles
 - (101) Maintenance of vehicle movement control system
 - (111) Maintenance of fare collection and counting equipment
 - (122) Maintenance of roadway and track

- (021-025,127,128,131) Maintenance of passenger stations, operating stations, garage and shop, and general administration buildings, grounds, and equipment
 - (012) Maintenance of communication systems
 - (041) Operation and maintenance of electric power facilities

- (106) General administration
 - (145) Preliminary transit system development
 - (151) Ticketing and fare collection
 - (161) System security
 - (165) Injuries and damages
 - (166) Safety
 - (167) Personnel administration
 - (168) General legal services
 - (169) General insurance
 - (170) Data processing
 - (171) Finance & accounting
 - (172) Purchasing and stores
 - (173) General accounting
 - (174) Real estate management
 - (175) Office management & services
 - (176) General management
 - (162) Customer service
 - (163) Promotion
 - (164) Market research
 - (177) Planning
 - (181) General function

Unit cost data at this level of detail can be used directly in O & M models for selected functions.

- **Stratum 4 detail:** Number of employees per unit of service. For Section 15 data, data is provided only for the ten major classifications of employees requested in Section 15 reporting at the Level R and C function level:
 - Vehicle operations: platform hours per
 - Transportation administration staff
 - Revenue vehicle operator
 - Transportation support staff

 - Vehicle maintenance: revenue vehicle miles per
 - Vehicle maintenance administration staff
 - Revenue vehicle inspection and maintenance staff
 - Vehicle maintenance support staff

- Non-vehicle maintenance:
 - Non-vehicle maintenance administration staff per peak vehicle (bus) or per route-mile (rail)
 - Non-vehicle maintenance support staff per peak vehicle (bus) or per route-mile (rail)

- General and administrative:
 - Marketing and planning staff per vehicle hour
 - General administration support per vehicle hour

Because of the level of aggregation in the Section 15 data this information can only be used to test the reasonableness of model results. More detailed information is provided based on the previously developed O & M cost models.

DEVELOPMENT OF THE O & M COST DATA BASE

The O & M Cost Data Base was developed primarily using the Section 15 data tapes for the years 1986 through 1988 which were obtained from the Transportation Systems Center (TSC). The data tapes were determined to be the best source of Section 15 data because:

- the data tapes provide operating cost data at the detailed level actually reported while the published report and the diskettes provide data aggregated to the R level only
- the data tapes provide data reported on Form 321: Operators' Wages Subsidiary Schedule, the only source of data for platform hours

Lotus 1-2-3 spreadsheets were created from the raw data tapes. The spreadsheets are structured as the actual Section 15 reporting forms (i.e., lines and columns).

A hierarchy of data was developed (as noted above) to take advantage of the various levels of detail reported under Section 15. The data base includes detailed data for the Section 15 level A reporters. The aggregated level R data includes both data reported at the R level and A level data aggregated.

The Section 15 data was manipulated in specific costs/functions for consistency and ease of analysis. Specifically:

- All data for operators' wages was moved to the vehicle operations function (A level function 031; R level function 010). The Section 15 reporting system allows reporters to report operators' wages at each of the 44 level A functions.
- All data reported for propulsion power was moved to vehicle operations function (A level function 031; R level function 010). For propulsion powered modes (i.e., rail rapid, light rail, and commuter rail), propulsion

power should be reported under the vehicle operations function according to the Section 15 Reporting Manual. However, many rail properties continue to report propulsion power under the non-vehicle maintenance function, operation and maintenance of electric power facilities.

- All data for insurance and claims was moved to the general administration functions insurance and injuries and damages, respectively, at the A level. The Section 15 reporting system allows reporters to report insurance and claims under each of the 44 level A functions.
- Joint expenses for individual object classes were allocated to modes based on the allocation of total joint expenses to modes for each function. The Section 15 data base allows for the reporting of joint expenses at the object class level. The joint modes are then allocated to modes only at the function level.
- Several A level functions were aggregated for consistency and ease of comparison to the operating cost models. For example, Section 15 distinguishes servicing and repair of revenue vehicles in four functions: servicing revenue vehicles, inspection and repair of revenue vehicles, accident repairs and vandalism repairs. The cost models generally did not provide this level of distinction; however the cost models provide critical data on number of employees which is not available in the Section 15 reporting system. Therefore, it was important that the two sources be compatible.

GUIDANCE IN STRUCTURING OF COST MODELS AND USE OF O & M COST DATA BASE

The biggest challenge in incorporating the experience of peer transit properties is the need to be knowledgeable about the operating environment of these peer properties and the extent to which that environment is applicable to the situation to be addressed by the model.

In the case of rail transit systems, there is now a broad range of experience from which to draw. This includes both newer systems and older systems operating new equipment.

Appendices 2 and 3 describe light/rapid rail and commuter rail properties, respectively, based primarily on 1989 operating and financial data (except as noted). The following information is presented:

- **Operating expense:** This is a gross measure of the size of the transit system. Properties with higher operating expenses generally have a larger infrastructure to maintain. New rail transit systems might best draw on the experience of smaller properties. Extensions to larger transit systems might best draw on the experience of larger systems.
- **Revenue vehicle-miles:** This is gross measure of system size.

- **Peak vehicles:** This is a gross measure of system size.
- **Average speed:** Higher operating speeds indicate more efficient operations. All other things being equal, at higher speeds a property can provide the same level of service with fewer vehicles and fewer operating personnel.
- **Unlinked passenger trips:** This is another gross measure of system size.
- **Average operating expense/revenue vehicle-mile:** This is an aggregate measure of operating efficiency. As discussed below, efficiency is directly related to labor costs, particularly wage rates.
- **Top hourly wage:** This is an index of labor costs, although a precise measure of average wage rates since all employees do not earn the top wage rate. Wages are indicated for the following positions:
 - Operators (wages specific to operators and conductors/guards are indicated, as necessary)
 - Vehicle mechanics
- **Labor productivity:** This includes gross measures of employees per unit of service provided for the following functions:
 - Vehicle operating employees/million vehicle revenue-miles
 - Vehicle maintenance employees/million vehicle revenue-miles
 - Non-vehicle maintenance employees/route-mile
 - General & administrative employees per million vehicle revenue-miles
- **Percent contracted:** Many transit properties contract-out many maintenance functions. A high level of contracting suggests that the labor productivity values may not be comparable to peer properties. Values are provided for vehicle maintenance and non-vehicle maintenance.
- **Budget-based labor productivity data:** Additional information for budget documents is provided for selected light rail and rail rapid transit properties.
 - Fiscal year of source document (these data are more recent than the 1989 Section 15 data presented elsewhere).
 - Transportation labor productivity:
 - Hourly: platform hour per operator
 - Front-line supervisory: operators per supervisor

- **Vehicle maintenance labor productivity:**
 - Hourly: vehicle-miles per mechanic
 - Front-line supervisory: mechanics per supervisor
- **Non-vehicle maintenance labor productivity: for power, track & structures, facilities, and signals & communication:**
 - Hourly employees/track-mile (or route-mile, or station)
 - Front-line supervisory: mechanics per supervisor
- **Age of vehicles:** Older vehicles tend to require more maintenance than newer vehicles. Two indicators are provided:
 - Average age
 - Percent of vehicles less than or equal to 10 years old

In the case of commuter rail, this information is provided for locomotives/trailer coaches/self-propelled coaches

- **Key Dates:** Older facilities require more maintenance than new facilities. The following indicators are presented:
 - Date
 - Initiation of service, expansion of service, or electrification (in the case of commuter railroads)
- **Vehicle size:** Many properties, particularly older properties, should use shorter vehicles to accommodate tight right-of-way clearances. This increase the peak vehicle requirement. The following indicators are provided:
 - Length
 - Width
 - Seats
 - Passenger capacity (average, not "crush" capacity is indicated)
- **Diesel/electric:** This identifies whether commuter railroad are powered by diesel engines or electric motors (or both).
- **Route-miles:** This is an aggregate measure of system size. It represents the end-to-end mileage of line operated. It is equal to one-half of the Section 15 "directional route-miles"; it represents the length of the "lines on a map". Single-track mileage is thus counted the same as double-track mileage. The following detail is provided:

- Subway
 - Surface
 - Aerial
- **Track-miles:** This measure includes local and express tracks, in each direction, as well as yard and other non-revenue track miles.
 - **1,000 Revenue vehicle-miles/track-mile:** This is an indicator of the intensity of track use, which can affect track maintenance requirements. A limitation in this value is that it evenly weights revenue and non-revenue trackage. Typically, non-revenue track requires less maintenance than revenue track, due to lower operating speeds.
 - **Stations:** This is an aggregate measure of system size. The following detail is provided:
 - Subway
 - Surface
 - Aerial
 - **Maintenance facilities:** This is an aggregate measure of system size
 - **CBD Operations:** For light rail properties, this indicates whether downtown track is in street traffic, in a transit mall, or in subway.
 - **Other street operations:** For light rail properties, this indicates whether any track outside of the downtown is in streets in mixed traffic.
 - **Organizational structure:** Autonomous agencies are generally responsible for all functional areas. Agencies that are an operating unit of a statewide or regional entity may not be responsible for various finance and other administrative functions.
 - **Vehicle staffing:** It is important to recognize that some properties use conductors and ticket collectors to operate doors and collect fares.
 - **Significant sophisticated technology:** This addresses the degree of sophistication of vehicles, train control, and fare collection equipment
 - **Type of platforms:** Simple low-level platforms are less expensive to maintain than high-level platforms, however, they result in longer dwell times and lower overall operating speeds.

V. GUIDELINES FOR DOCUMENTATION OF ASSUMPTIONS IN O & M COST MODELS

INTRODUCTION

Documentation of an O & M cost model is necessary to permit FTA and other reviewers to:

- Determine the reasonableness of the cost projections
- Establish lower and upper bounds in the context of sensitivity analyses
- Serve as a point of departure for future studies
- Educate other professionals.

Ideally, every line item and every component in every line should be documented. The minimum requirements for documentation should include the following:

- Logic behind structure, e.g., if prior models distinguished between old and new vehicles, but future operations assume that the older vehicles will be retired, this should be noted)
- Source document(s) name(s) and transit property (or other source)
- Date of data
- Discussion of anticipated changes from current conditions (e.g., labor contract, aging fleet) and, if appropriate, other reasons why historical trend data is not used
- Correlation between ranges in data base and assumptions actually used, i.e., explanations if outside range
- Reasons for applicability of peer property data

One approach to accomplish this, in a microcomputer spreadsheet application, would be to add comment columns for each row in the spreadsheet.

This section suggests the appropriate level of documentation of information, assumptions, and sources of information and assumptions in the structuring and application of O & M cost models. Specifically, documentation is important for the following:

- Characterizing similar transit systems whose labor productivity and unit cost experience is applied in the model.
- Developing a checklist of changes to the model to consider in future applications.

DOCUMENTATION OF VEHICLE OPERATIONS

The following issues should be addressed in the documentation of the vehicle operations portion of O & M cost models:

- **(011) Transportation administration:** value as a percentage of total operations costs
- **(012) Revenue vehicle movement control:**
 - Bus systems:
 - Rationale for deployment of street supervisors (e.g., by sector or garage or per platform hour)
 - Potential use of automatic vehicle location technology
 - Rail systems:
 - Sophistication of train control (automatic block signals, cab signals, automatic train control)
 - Level of effort required as network becomes more complex (e.g., increased branching) and as train frequencies increase
 - General: Salaries for supervisors and controllers
- **(021) Scheduling of transportation operations:**
 - Deployment of traffic checkers; potential changes with implementation of rail service and feeder bus service
 - Sophistication of scheduling and runcutting; increased use of automation
- **(031) Revenue vehicle operations:**
 - Service profile, by time of day: mix of straight, split, and tripper runs
 - Labor productivity (peak/off peak, by division to address differences in deadheading):
 - Platform hours per revenue hour
 - Scheduled pay hours per revenue hour
 - Actual pay hours per scheduled pay hour

- Wage rates: including average rate for full and part-time operators
- Fringe benefits:
 - Wage related: pension, FICA
 - Head count-related: medical, insurance

DOCUMENTATION OF VEHICLE MAINTENANCE

The following issues should be addressed in the documentation of the vehicle maintenance portion of O & M cost models:

- **(041) Maintenance administration:** value as a percentage of total vehicle maintenance costs
- **Each Level A function:** The following should be documented for revenue vehicle servicing (051), inspection and maintenance (061), accident repairs (062), vandalism repairs (071); service vehicle servicing (071), fuel (081), and inspection and maintenance (091):
 - Labor productivity, by type of vehicle
 - Average wage rates
 - Fringe benefits
 - Parts, by type of vehicle
 - Fuel, by type of vehicle
 - Contracted services

DOCUMENTATION OF NON-VEHICLE MAINTENANCE

The following issues should be addressed in the documentation of the non-vehicle maintenance portion of O & M cost models:

- **(042) Maintenance administration - non-vehicles:** value as percentage of total non-vehicle maintenance cost
- **(101) Maintenance of vehicle movement control system**
 - Sophistication of technology (e.g., automatic block signal, cab signal, automatic train control)
 - Split between way-side and control center equipment

- **(122) Maintenance of Roadway and Track**
 - Extent of tangent and curve sections
 - Track wear (vehicle-miles per mile of track) compared to peer properties
 - Type of rail fixation (e.g., wood tie on ballast, concrete tie on ballast, direct fixation on floating slab)
 - Hours of operation: 24-hour operation limits availability of track for extensive maintenance and increases costs
 - Busways: Assignment of responsibility to transit property or highway department for roadway surface repair and lighting

- **(123) Maintenance of passenger stations:**
 - Age of peer property stations
 - Mix of surface/aerial and subway stations
 - Climate (particularly for maintenance of surface/aerial stations)
 - Passenger traffic

- **Maintenance of Operating station buildings, grounds, and equipment (includes 121, 124, 128, 131):**
 - Passenger amenities (e.g., rest rooms, enclosed waiting areas)
 - Landscaping responsibility of transit property or other public entity
 - Size and number of park and ride lots

- **(125) Maintenance of garage and shop buildings, grounds, and equipment:**
 - Number and age of buildings
 - Size of garages (number of service positions, number of vehicle hoists and inspection pits)
 - Type of activities performed (e.g., component rebuild, paint and body shops)

- **(126) Maintenance of communication system:**
 - Number of vehicles
 - Age of equipment

- Sophistication of equipment (e.g., simple voice, AVL)
- Percent of work contracted out
- **(127) Maintenance of general administration buildings, grounds, and equipment:**
 - Age and size of buildings
 - Portion of general administration space leased and owned by transit property
 - Percent of work included in capital budget
 - Percent of work contracted out
- **(141) Operation and maintenance of electric power facilities:**
 - Number of substations (longer trains and more frequent service may result in more traction power substations)
 - Sophistication of traction power substations and tie-breaker stations)
 - Percent of work contracted out

DOCUMENTATION OF GENERAL ADMINISTRATION

In the cases of transit systems that are departments of municipal government, many general administrative functions may not be addressed in the Section 15 data. The mix of work performed in each function between in-house forces and contractors may vary from property to property. While this may not affect comparisons of total cost, it probably will affect comparisons of number of employees. Among the more important issues to be addressed are the following:

- **(145) Preliminary transit system development:** Service planning costs associated with day-to-day service decisions should be included. Much of this function is capital-related, however, and is not pertinent to projecting operating costs.
- **(151) Ticketing and fare collection:**
 - Fare collection technology
 - Hours of operation and hours that stations are manned
 - Extent of contracting out

■ **(161) System security:**

- Extent of law enforcement responsibilities of transit property and of local governments
- Intensity of police patrol function (e.g., number of stations patrolled by each police officer)
- Number of facilities with 24-hour security protection
- Extent of contracting out
- Extent of investigation and other administration functions
- Extent of training requirements

■ **(165) Injuries and damages**

- The claims experience for third party liability claims and for workers compensation claims should be addressed separately.
- Third party liability claims experience is typically very different for bus and rail modes for a given transit property.
- Workers' compensation claims experience typically varies for bus operators, rail operators, bus mechanics, rail mechanics, non-vehicle mechanics, station agents, and other employees (both in terms of claims rate and cost per claim)
- Third party liability claims rates and costs per claim vary from property to property, depending on trends in jury awards, "deep pocket syndrome", and other factors
- Workers' compensation claims rates and costs per claim vary from property to property, depending on state workers' compensation laws and regulations.

■ **(168) General legal services**

- Should address requirements related to contracts and tort litigation as well as general legal issues, including drafting of legal documents.
- Many properties contract-out significant portions of this function.

■ **(169) General insurance**

- Should include premiums for the following types of insurance:
 - Operating liability (injuries to passengers and third party property)
 - Operating property (damages to transit property-owned assets, e.g., buses, trains, equipment, facilities)
 - Boiler and machinery (damages to and caused by dangerous equipment)
 - Disappearance, Dishonesty, Destruction ("3-D") Crime (damage resulting from criminal activity)
 - Data processing (damages to computer equipment and data bases)
 - Owners, Landlord, and Tenant (damages related to leased real property)
- Premiums will depend on loss history, market conditions, and magnitude of (self-insured) deductible.

■ **(172) Purchasing and stores:**

- Number of storerooms
- Hours of operation of storerooms
- Number of subfleets of revenue vehicles (as the number of subfleets and vehicle manufacturers increases, so does the size of the inventory and the number of storeroom bins to be managed).

■ **(162) Customer service:**

- Division of responsibilities between transit property and other regional transportation agencies

DOCUMENTATION OF OPERATING STATISTICS

The documentation of O & M cost model driving variables should focus on level of service and facility descriptors:

- **Level of service statistics**
 - **Bus:** At a minimum this should include peak vehicle, revenue hours, and vehicle miles by type of vehicle, by operating garage. If significant changes in service profile by time of day is anticipated, then additional data regarding the breakdown of straight split, and tripper runs should be addressed.
 - **Rail:** Number of peak trains, peak vehicles, and vehicle miles
- **Physical description of facilities**
 - **Bus:** garages, park-and-ride lots, bus shelters, transfer centers, busway route-miles
 - **Rail:** route-miles or track miles, by vertical profile (e.g., subway, street operation, surface in private R.O.W., aerial); stations, by vertical profile; maintenance facilities and yards, chiller plants (if subway); traction power substations

DOCUMENTATION OF INFLATION

O & M cost model documentation should address the assumed annual rates of inflation and sources of information for the following:

- **Baseline rate of inflation:** This is the projected rate of inflation that underlies all projections of expenses and revenues. It is used for the basic conversion from base year (or uninflated) to year-of-expenditure (or inflated dollars). Typically, the local or national Consumer Price Index is used as the baseline rate of inflation.
- **Incremental rates of inflation:** Various components of expense and revenue may have rates of inflation above or below the baseline rate:
 - Hourly wages
 - Fringe benefits (especially health insurance costs)
 - Fuel
 - Electricity

**APPENDIX 1
O&M COST DATA BASE**

STRATUM 1

STRATUM 2

STRATUM 3

STRATUM 4

Stratum 1
Rail Rapid

O & M COST DATA BASE
 STRATUM 1
 1986-1989 RAPID RAIL
 LEVEL R FUNCTIONS
 COST PER UNIT OF SERVICE

Vehicle Operations Cost/Vehicle Hour

Transit Property	1986	1987	1988	1989
1003 MBTA	\$50.81	\$51.59	\$56.37	\$56.37
2008 NYCTA	28.05	31.11	32.47	32.47
2075 Patco	37.51	37.56	38.55	38.55
2098 PATH	35.35	41.52	38.11	38.11
3019 SEPTA	21.68	19.31	27.08	27.08
3030 WMATA	31.69	39.48	38.52	38.52
3034 Baltimore MTA	33.47	33.11	26.40	26.40
4022 MARTA	17.86	18.02	18.21	18.21
4034 Miami	52.59	59.33	47.49	47.49
5015 Cleveland RTA	70.94	33.59	47.08	47.08
5066 CTA	34.47	34.18	29.75	29.75
9003 BART	41.38	47.70	44.64	44.64
Minimum	17.86	18.02	18.21	18.21
Maximum	70.94	59.33	56.37	56.37

Vehicle Maintenance Cost/Vehicle Mile

Transit Property	1986	1987	1988	1989
1003 MBTA	\$1.97	\$1.96	\$2.06	\$2.06
2008 NYCTA	1.28	1.20	1.31	1.31
2075 Patco	0.80	0.80	0.78	0.78
2098 PATH	1.30	1.31	1.24	1.24
3019 SEPTA	1.05	1.19	0.90	0.90
3030 WMATA	1.52	0.10	1.05	1.05
3034 Baltimore MTA	1.81	1.62	0.93	0.93
4022 MARTA	0.52	0.60	0.50	0.50
4034 Miami	0.61	2.32	2.10	2.10
5015 Cleveland RTA	1.56	1.73	1.77	1.77
5066 CTA	0.92	1.03	0.88	0.88
9003 BART	0.94	0.94	0.95	0.95
Minimum	0.52	0.10	0.50	0.50
Maximum	1.97	2.32	2.10	2.10

Non-Vehicle Maintenance Cost/Route Mile

Transit Property	1986	1987	1988	1989
1003 MBTA	\$532,115	\$41,769,276	\$532,606	\$532,606
2008 NYCTA	954,099	488,909,565	1,119,709	1,119,709
2075 Patco	115,477	3,640,039	133,193	133,193
2098 PATH	847,755	22,746,774	953,910	953,910
3019 SEPTA	439,063	32,851,120	324,217	324,217
3030 WMATA	269,344	54,276,398	422,148	422,148
3034 Baltimore MTA	455,609	6,707,677	320,223	320,223
4022 MARTA	186,985	10,862,750	186,485	186,485
4034 Miami	261,720	4,272,025	89,240	89,240
5015 Cleveland RTA	88,442	5,722,550	156,756	156,756
5066 CTA	254,710	50,038,245	318,810	318,810
9003 BART	227,681	33,566,855	244,666	244,666
Minimum	88,442	3,640,039	89,240	89,240
Maximum	954,099	488,909,565	1,119,709	1,119,709

O & M COST DATA BASE
 STRATUM 1
 1986-1989 RAPID RAIL
 LEVEL R FUNCTIONS
 COST PER UNIT OF SERVICE

General Administration Cost/Vehicle Mile

Transit Property	1986	1987	1988	1989
1003 MBTA	\$2.16	\$2.18	\$2.16	\$2.16
2008 NYCTA	2.33	2.25	2.38	2.38
2075 Patco	1.57	1.82	1.70	1.70
2098 PATH	2.91	2.93	3.20	3.20
3019 SEPTA	2.95	3.27	3.08	3.08
3030 WMATA	2.45	2.22	2.59	2.59
3034 Baltimore MTA	3.24	3.34	2.72	2.72
4022 MARTA	1.04	1.24	1.47	1.47
4034 Miami	3.18	2.40	2.76	2.76
5015 Cleveland RTA	0.84	1.77	2.00	2.00
5066 CTA	1.20	1.23	1.14	1.14
9003 BART	1.26	1.24	1.27	1.27
Minimum	0.84	1.23	1.14	1.14
Maximum	3.24	3.34	3.20	3.20

General Administration Cost/
 Operations and Maintenance Costs

Transit Property	1986	1987	1988	1989
1003 MBTA	\$0.30	\$0.31	\$0.32	\$0.32
2008 NYCTA	0.53	0.50	0.49	0.49
2075 Patco	0.52	0.38	0.55	0.55
2098 PATH	0.50	0.33	0.53	0.53
3019 SEPTA	0.63	0.74	0.75	0.75
3030 WMATA	0.57	0.50	0.57	0.57
3034 Baltimore MTA	0.44	0.49	0.69	0.69
4022 MARTA	0.50	0.56	0.68	0.68
4034 Miami	0.70	0.09	0.61	0.61
5015 Cleveland RTA	0.14	0.31	0.31	0.31
5066 CTA	0.32	0.32	0.32	0.32
9003 BART	0.36	0.33	0.35	0.35
Minimum	0.14	0.09	0.31	0.31
Maximum	0.70	0.74	0.75	0.75

Stratum 1
Light Rail

**O & M COST DATA BASE
STRATUM 1
1986-1989 LIGHT RAIL
LEVEL R FUNCTIONS
COST PER UNIT OF SERVICE**

Vehicle Operations Cost/Vehicle Hour

Transit Property	1986	1987	1988	1989
0008 Portland	NR	\$29.31	\$29.18	\$30.16
1003 MBTA	119.03	118.77	93.97	83.88
2004 Buffalo	33.65	27.77	23.15	25.72
3019 SEPTA	27.22	27.59	35.11	36.07
3022 PAT	71.14	70.73	51.45	47.42
5015 Cleveland RTA	50.64	32.68	43.92	36.67
6032 New Orleans	29.39	26.42	22.32	22.02
9013 Santa Clara	NR	NR	102.83	76.10
9015 MUNI	45.15	45.36	56.27	61.50
9054 San Diego Trolley	30.22	25.77	27.98	28.84
Minimum	27.22	25.77	22.32	22.02
Maximum	119.03	118.77	102.83	83.88

Vehicle Maintenance Cost/Vehicle Mile

Transit Property	1986	1987	1988	1989
0008 Portland	NR	\$0.08	\$1.22	\$1.28
1003 MBTA	5.23	4.95	5.04	4.19
2004 Buffalo	3.02	2.38	2.36	2.38
3019 SEPTA	2.06	2.56	0.27	2.17
3022 PAT	3.81	3.49	0.30	2.24
5015 Cleveland RTA	1.56	2.05	2.10	2.05
6032 New Orleans	2.46	1.22	1.04	1.08
9013 Santa Clara	NR	NR	4.14	3.72
9015 MUNI	0.33	3.78	3.79	3.56
9054 San Diego Trolley	0.60	0.69	0.79	*
Minimum	0.33	0.08	0.27	1.08
Maximum	5.23	4.95	5.04	4.19

Non-Vehicle Maintenance Cost/Route Mile

Transit Property	1986	1987	1988	1989
0008 Portland	NR	\$2,289	\$30,399	\$39,981
1003 MBTA	67,275	68,111	61,411	65,231
2004 Buffalo	199,885	218,356	258,543	267,046
3019 SEPTA	54,631	61,834	39,591	48,173
3022 PAT	196,377	164,549	169,818	204,539
5015 Cleveland RTA	64,518	116,844	82,292	130,018
6032 New Orleans	30,473	53,854	46,739	4,597
9013 Santa Clara	NR	NR	64,631	116
9015 MUNI	126,588	123,516	117,510	127,115
9054 San Diego Trolley	24,782	24,405	19,386	29,041
Minimum	24,782	2,289	19,386	116
Maximum	199,885	218,356	258,543	267,046

* Vehicle miles for San Diego Trolley were not reported.

O & M COST DATA BASE
 STRATUM 1
 1986-1989 LIGHT RAIL
 LEVEL R FUNCTIONS
 COST PER UNIT OF SERVICE

General Administration Cost/Vehicle Mile

Transit Property	1986	1987	1988	1989
0008 Portland	NR	\$0.09	\$1.72	\$1.51
1003 MBTA	4.67	4.09	3.59	4.09
2004 Buffalo	6.52	5.84	4.78	4.02
3019 SEPTA	1.33	1.52	1.37	1.81
3022 PAT	1.27	1.61	1.28	1.51
5015 Cleveland RTA	0.84	1.59	1.76	2.32
6032 New Orleans	1.17	1.84	1.81	2.55
9013 Santa Clara	NR	NR	7.95	4.99
9015 MUNI	0.92	0.82	1.51	2.35
9054 San Diego Trolley	0.89	0.89	1.01	*
Minimum	0.84	0.09	1.01	1.51
Maximum	6.52	5.84	7.95	4.99

General Administration Cost/
 Operations and Maintenance Costs

Transit Property	1986	1987	1988	1989
0008 Portland	NR	\$0.51	\$0.45	\$0.37
1003 MBTA	0.30	0.27	0.25	0.32
2004 Buffalo	0.63	0.67	0.59	0.48
3019 SEPTA	0.20	0.20	0.18	0.24
3022 PAT	0.10	0.12	0.14	0.15
5015 Cleveland RTA	0.14	0.23	0.23	0.32
6032 New Orleans	0.18	0.35	0.38	0.69
9013 Santa Clara	NR	NR	0.50	0.37
9015 MUNI	0.10	0.08	0.14	0.21
9054 San Diego Trolley	0.36	0.35	0.37	0.38
Minimum	0.10	0.08	0.14	0.15
Maximum	0.63	0.67	0.59	0.69

* Vehicle miles for San Diego Trolley were not reported.

**Stratum 1
Commuter Rail**

O & M COST DATA BASE
 STRATUM 1
 1986-1989 COMMUTER RAIL
 LEVEL R FUNCTIONS
 COST PER UNIT OF SERVICE

Vehicle Operations Cost/Vehicle Hour

Transit Property	1986	1987	1988	1989
1071 B&M/MBTA	\$120.87	\$126.90	NR	NR
2078 MTNR	77.61	84.54	81.58	90.37
2080 NJTC	83.48	81.07	74.08	69.96
2099 Staten Island	*	55.09	40.35	47.63
2100 LIRR	*	99.93	92.05	106.88
5118 Chicago Commuter Rail	111.04	137.75	136.43	142.06
5120 Illinois Central	191.16	NR	NR	NR
5121 Chicago & N. Western	104.85	104.89	104.08	105.70
5122 Burlington Northern	166.89	136.11	134.94	144.19
9075 CALTRANS	*	181.45	169.87	178.42
Minimum	77.61	55.09	40.35	47.63
Maximum	191.16	181.45	169.87	178.42

Vehicle Maintenance Cost/Vehicle Mile

Transit Property	1986	1987	1988	1989
1071 B&M/MBTA	\$2.98	\$2.80	NR	NR
2078 MTNR	3.28	2.35	2.24	2.25
2080 NJTC	1.81	1.89	2.01	2.08
2099 Staten Island	*	0.88	1.10	1.34
2100 LIRR	*	2.24	2.17	2.49
5118 Chicago Commuter Rail	2.06	2.59	2.60	2.82
5120 Illinois Central	3.41	NR	NR	NR
5121 Chicago & N. Western	1.46	1.55	1.75	0.19
5122 Burlington Northern	1.21	1.50	1.39	1.47
9075 CALTRANS	*	0.98	0.90	0.97
Minimum	1.21	0.98	0.90	0.19
Maximum	3.41	2.80	2.60	2.82

Non-Vehicle Maintenance Cost/Route Mile

Transit Property	1986	1987	1988	1989
1071 B&M/MBTA	**	\$13,273.67	NR	NR
2078 MTNR	177,745.39	180,069.03	169,818.63	187,425.31
2080 NJTC	53,497.15	51,543.07	57,264.91	59,365.96
2099 Staten Island	*	133,565.56	170,173.73	219,882.10
2100 LIRR	*	146,328.41	140,206.72	166,621.28
5118 Chicago Commuter Rail	48,665.13	58,811.76	61,736.83	61,827.50
5120 Illinois Central	80,776.12	NR	NR	NR
5121 Chicago & N. Western	40,469.71	41,428.47	47,588.35	52,404.61
5122 Burlington Northern	29,342.46	41,687.40	38,513.42	31,622.21
9075 CALTRANS	*	6,051.14	6,055.71	5,894.39
Minimum	29,342.46	6,051.14	6,055.71	5,894.39
Maximum	177,745.39	180,069.03	170,173.73	219,882.10

* Route Miles for B&M/MBTA not reported.

** In 1986 Staten Island Rapid Transit, Long Island Rail Road and CALTRANS reported all expenses as general administration.

O & M COST DATA BASE
 STRATUM 1
 1986-1989 COMMUTER RAIL
 LEVEL R FUNCTIONS
 COST PER UNIT OF SERVICE

General Administration Cost/Vehicle Mile

Transit Property	1986	1987	1988	1989
1071 B&M/MBTA	\$1.14	\$1.11	NR	NR
2078 MTNR	2.49	2.58	2.72	2.76
2080 NJTC	1.44	1.88	1.75	1.68
2099 Staten Island	5.38	1.62	2.08	1.39
2100 LIRR	7.81	1.24	1.26	1.47
5118 Chicago Commuter Rail	1.78	1.53	1.74	1.62
5120 Illinois Central	0.95	NR	NR	NR
5121 Chicago & N. Western	0.59	0.68	0.63	0.82
5122 Burlington Northern	0.77	0.87	0.93	1.04
9075 CALTRANS	0.69	1.56	1.57	1.34
Minimum	0.59	0.68	0.63	0.82
Maximum	7.81	2.58	2.72	2.76

General Administration Cost/
 Operations and Maintenance Costs

Transit Property	1986	1987	1988	1989
1071 B&M/MBTA	\$0.14	\$0.14	NR	NR
2078 MTNR	0.30	0.34	0.39	0.38
2080 NJTC	0.27	0.35	0.31	0.30
2099 Staten Island	*	0.32	0.41	0.22
2100 LIRR	*	0.18	0.19	0.19
5118 Chicago Commuter Rail	0.25	0.17	0.19	0.17
5120 Illinois Central	0.07	NR	NR	NR
5121 Chicago & N. Western	0.11	0.12	0.10	0.13
5122 Burlington Northern	0.12	0.14	0.16	0.17
9075 CALTRANS	*	0.24	0.25	0.20
Minimum	0.07	0.12	0.10	0.13
Maximum	0.30	0.35	0.41	0.38

* Route Miles for B&M/MBTA not reported.

** In 1986 Staten Island Rapid Transit, Long Island Rail Road and CALTRANS reported all expenses as general administration.

**Stratum 1
Motor Bus**

**O & M COST DATA BASE
 STRATUM 1
 1986-1989 MOTOR BUS
 LEVEL R FUNCTIONS
 COST PER UNIT OF SERVICE**

Vehicle Operations Cost/Vehicle Hour

Transit Property	1986	1987	1988	1989
0001 Seattle Metro	\$27.33	\$18.64	\$30.31	\$33.09
5008 Milwaukee	24.79	24.99	27.64	27.31
5012 QCM/SORTA	26.27	27.25	28.75	29.00
5027 Minneapolis	27.88	28.79	31.58	31.01
5113 Chicago Sub Bus Div	26.35	26.83	27.09	27.80
5119 City of Detroit	28.66	29.67	30.03	30.94
6004 Dallas**	21.73	21.13	24.50	29.34
6008 Houston	24.32	24.44	26.69	27.70
6011 San Antonio	20.45	19.37	20.10	20.18
7006 Bi State	25.30	24.35	27.59	24.62
8001 Salt Lake	17.15	19.02	18.85	19.90
8006 Denver	25.30	26.18	27.09	27.63
9002 Honolulu	30.19	30.77	30.91	32.17
9014 AC Transit	28.15	31.39	33.21	35.65
9021 SCRTD	33.73	32.18	34.41	36.57
9036 Orange County	31.43	30.29	31.16	31.74
Minimum	17.15	18.64	18.85	19.90
Maximum	33.73	32.18	34.41	36.57

Vehicle Maintenance Cost/Vehicle Mile

Transit Property	1986	1987	1988	1989
0001 Seattle Metro	\$0.64	\$0.43	\$0.83	\$0.90
5008 Milwaukee	0.78	0.72	0.76	0.75
5012 QCM/SORTA	0.97	0.89	0.88	0.83
5027 Minneapolis	6.97	0.69	0.73	0.76
5113 Chicago Sub Bus Div	0.71	0.77	0.78	0.69
5119 City of Detroit	1.58	1.28	1.31	1.46
6004 Dallas**	0.70	0.73	0.88	0.88
6008 Houston	0.91	0.90	0.94	0.86
6011 San Antonio	0.42	0.43	0.42	0.43
7006 Bi State	0.74	0.84	0.64	0.83
8001 Salt Lake	0.53	0.43	0.51	0.52
8006 Denver	0.84	0.76	0.81	0.82
9002 Honolulu	0.78	0.83	0.85	0.91
9014 AC Transit	0.78	0.70	0.67	0.94
9021 SCRTD	1.09	1.03	1.04	1.18
9036 Orange County	0.68	0.73	0.73	0.77
Minimum	0.42	0.43	0.42	0.43
Maximum	6.97	1.28	1.31	1.46

* Peak vehicles for Chicago-Suburban Bus Division were not reported in 1986 and 1989.

** Dallas Area Rapid Transit was assigned a new ID number, 6056, in 1989.

O & M COST DATA BASE
 STRATUM 1
 1986-1989 MOTOR BUS
 LEVEL R FUNCTIONS
 COST PER UNIT OF SERVICE

Non-Vehicle Maintenance Cost/Peak Vehicle

Transit Property	1986	1987	1988	1989
0001 Seattle Metro	\$7,499.57	\$1,499.39	\$9,769.94	\$10,571.61
5008 Milwaukee	5,248.92	5,703.30	6,878.72	7,031.74
5012 QCM/SORTA	5,790.93	5,937.86	6,147.88	7,156.80
5027 Minneapolis	3,473.90	3,607.91	3,596.11	3,776.96
5113 Chicago Sub Bus Div*	*	2,177.09	2,198.70	*
5119 City of Detroit	13,321.94	13,231.45	13,396.91	13,023.26
6004 Dallas**	3,822.60	4,593.66	5,562.94	6,731.99
6008 Houston	9,468.89	8,836.57	8,431.62	8,511.44
6011 San Antonio	3,196.46	3,196.83	3,860.84	3,486.58
7006 Bi State	6,495.03	6,294.77	6,631.45	6,362.64
8001 Salt Lake	2,313.14	2,447.61	2,718.32	2,916.73
8006 Denver	12,383.99	13,204.09	13,267.95	16,256.60
9002 Honolulu	2,766.64	3,264.29	3,155.22	2,870.27
9014 AC Transit	3,239.29	4,045.01	5,080.34	5,755.73
9021 SCRTD	7,382.22	8,954.16	8,278.60	6,846.30
9036 Orange County	6,408.96	6,768.38	7,212.25	7,282.02
Minimum	2313.14	1499.39	2198.70	2870.27
Maximum	13321.94	13231.45	13396.91	16256.60

General Administration Cost/Vehicle Mile

Transit Property	1986	1987	1988	1989
0001 Seattle Metro	\$0.63	\$0.31	\$0.67	\$0.70
5008 Milwaukee	0.48	0.47	0.49	0.50
5012 QCM/SORTA	0.61	0.61	0.66	0.64
5027 Minneapolis	0.51	0.58	0.54	0.63
5113 Chicago Sub Bus Div	0.72	1.17	1.35	1.39
5119 City of Detroit	0.84	0.99	0.91	1.24
6004 Dallas**	1.02	1.02	1.46	1.14
6008 Houston	1.25	0.84	0.78	0.78
6011 San Antonio	0.41	0.37	0.39	0.40
7006 Bi State	0.75	0.91	0.77	0.88
8001 Salt Lake	0.43	0.50	0.47	0.49
8006 Denver	0.58	0.63	0.63	0.73
9002 Honolulu	0.74	0.66	0.73	0.67
9014 AC Transit	0.75	0.79	0.90	1.00
9021 SCRTD	0.87	0.87	0.82	1.15
9036 Orange County	0.79	0.78	0.86	0.91
Minimum	0.41	0.31	0.39	0.40
Maximum	1.25	1.17	1.46	1.39

* Peak vehicles for Chicago-Suburban Bus Division were not reported in 1986 and 1989.

** Dallas Area Rapid Transit was assigned a new ID number, 6056, in 1989.

O & M COST DATA BASE
 STRATUM 1
 1986-1989 MOTOR BUS
 LEVEL R FUNCTIONS
 COST PER UNIT OF SERVICE

General Administration Cost/
 Operations and Maintenance Costs

Transit Property	1986	1987	1988	1989
0001 Seattle Metro	\$0.24	\$0.19	\$0.04	\$0.21
5008 Milwaukee	0.16	0.16	0.16	0.16
5012 QCM/SORTA	0.20	0.20	0.21	0.21
5027 Minneapolis	0.18	0.20	0.18	0.20
5113 Chicago Sub Bus Div	0.29	0.44	0.51	0.55
5119 City of Detroit	0.21	0.25	0.23	0.30
6004 Dallas**	0.45	0.44	0.55	0.38
6008 Houston	0.46	0.30	0.27	0.28
6011 San Antonio	0.21	0.20	0.20	0.21
7006 Bi State	0.28	0.33	0.28	0.32
8001 Salt Lake	0.26	0.31	0.28	0.27
8006 Denver	0.21	0.23	0.22	0.24
9002 Honolulu	0.26	0.22	0.25	0.21
9014 AC Transit	0.27	0.27	0.28	0.26
9021 SCRTD	0.24	0.25	0.22	0.29
9036 Orange County	0.28	0.27	0.29	0.29
Minimum	0.16	0.16	0.04	0.16
Maximum	0.46	0.44	0.55	0.55

* Peak vehicles for Chicago-Suburban Bus Division were not reported in 1986 and 1989.

** Dallas Area Rapid Transit was assigned a new ID number, 6056, in 1989.

Stratum 2
Rail Rapid

O & M COST DATA BASE
 STRATUM 2
 1986 RAIL RAPID
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	PATH 2098	SEPTA 3019	WMATA 3030	MTA 3034	MARTA 4022
010	VEHICLE OPERATIONS									
-1	Operators	Plat-Hr	\$24.3453	\$16.1201	\$20.7288	\$13.0828	\$21.6456	\$27.8647	\$45.4051	\$22.6900
-2	Fuel & Lube	Veh-Mi	0.0027	0.0034			0.4535	0.0001		0.0002
-3	Tires & Tube	Veh-Mi		0.0005						
-4	Electricity	Veh-Mi	0.5786	0.3378	0.6201	0.5626	0.5588	0.7138	0.4545	0.2621
-5	Contract Service	Plat-Hr	0.0017			0.3539		0.0256		
-6	Other Labor	Plat-Hr	15.6225	4.7362	11.9202	20.2920	18.1606	15.1451	40.3841	14.6132
-7	Other Nonlabor	Plat-Hr	5.1830	3.7564	0.1623	1.6738	-0.1421	0.0558	0.2255	0.0905
041	VEHICLE MAINTENANCE									
-1	Labor	Veh-Mi	1.5606	0.8684	0.5662	1.0726	0.7976	1.2127	1.3915	0.3282
-2	Contract Service	Veh-Mi	0.0976	0.0230	0.0773	0.0142	0.0034	0.0252	0.0108	0.0633
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0066	0.0012	0.0086		0.0014	0.0357	0.0042	0.0001
-4	Tires Tube/Service Vehicles	Veh-Mi					0.0026	0.0020		
-5	Parts	Veh-Mi	0.3508	0.2546	0.1524	0.1665	0.3172	0.2483	0.3028	0.1280
-6	Other Nonlabor	Veh-Mi	-0.0726	0.0079	0.0000	0.0497	-0.0700	-0.0001	0.0000	-0.0002
	Contract Service/Total		5.02%	1.99%	9.61%	1.09%	0.32%	1.65%	0.63%	12.18%
042	NON-VEHICLE MAINTENANCE									
-1	Labor	Rte-Mi	514,419	944,680	94,006	487,355	244,147	188,263	314,268	131,946
-2	Contract Service	Rte-Mi	95,043	19,468	6,480	9,928	10,292	45,513	63,231	27,778
-3	Parts	Rte-Mi	24,679	111,213	14,018	84,565	39,033	31,154	50,652	27,043
-4	Other Nonlabor	Rte-Mi	(102,283)	(120,917)		27,065	(12,324)	4,532	2	515
	Contract Service/Total		17.87%	2.04%	5.66%	1.63%	3.66%	16.89%	14.77%	14.83%
160	GENERAL ADMINISTRATION									
-1	Labor	Veh-Mi	1.5567	1.7825	0.8952	1.2482		1.6497	1.5530	0.7035
-2	Contract Service	Veh-Mi	0.0162	0.0009	0.0040	0.3427	1.4847	0.0729	0.1301	0.0098
-3	Supplies	Veh-Mi	0.0017	0.0134	0.0123	0.0551	0.0390	0.2438	0.0435	0.0033
-4	Insurance	Veh-Mi	0.2399	0.1202	0.3201	0.4197	0.0060	0.0981	0.6680	0.1168
-5	Other Nonlabor	Veh-Mi	0.3783	0.3953	0.3478	0.8509	1.0580	0.3884	0.7038	0.2044

Platform Hours 970,893 16,796,300 80,259 844,800 377,634 459,391 40,432 168,436
 Vehicle Miles 18,224,200 299,538,200 3,912,100 11,691,000 15,810,400 27,926,700 1,802,400 12,156,500
 Route Miles 76.6 481.2 30.5 27.6 80.4 139.1 14.4 51.5

O & M COST DATA BASE
 STRATUM 2
 1986 RAIL RAPID
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Miami 4034	Cleveland 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS							
-1	Operators	Plat-Hr	\$12.2094	\$31.8191	\$24.3124	\$26.9198	\$12.2094	\$45.4051
-2	Fuel & Lube	Veh-Mi		0.0002			0.0001	0.4535
-3	Tires & Tube	Veh-Mi					0.0005	0.0005
-4	Electricity	Veh-Mi	1.0152	0.9554	0.4878	0.4601	0.2621	1.0152
-5	Contract Service	Plat-Hr	1.4385	0.0297	0.0023	0.2070	0.0017	1.4385
-6	Other Labor	Plat-Hr	7.1530	9.2852	17.7894	41.5091	4.7362	41.5091
-7	Other Nonlabor	Plat-Hr	0.1419	0.1224	0.2193	11.9103	-0.1421	11.9103
041	VEHICLE MAINTENANCE							
-1	Labor	Veh-Mi	0.5926	1.0060	0.5600	0.7827	0.3282	1.5606
-2	Contract Service	Veh-Mi	0.0022	0.2036	0.0197	0.0587	0.0022	0.2036
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0011				0.0001	0.0357
-4	Tires Tube/Service Vehicles	Veh-Mi					0.0020	0.0026
-5	Parts	Veh-Mi	0.0155	0.3043	0.2930	0.1493	0.0155	0.3508
-6	Other Nonlabor	Veh-Mi	0.0042	0.0471	0.0456	-0.0588	-0.0726	0.0497
	Contract Service/Total		0.35%	13.04%	2.14%	63.00%	0.32%	63.00%
042	NON-VEHICLE MAINTENANCE							
-1	Labor	Rte-Mi	153,869	72,086	190,304	211,541	72,086	944,680
-2	Contract Service	Rte-Mi	54,313	4,947	13,117	9,155	4,947	95,043
-3	Parts	Rte-Mi	22,008	4,070	18,397	15,306	4,070	111,213
-4	Other Nonlabor	Rte-Mi	31,418	7,427	32,794	(12,446)	(120,917)	32,794
	Contract Service/Total		20.76%	5.59%	5.15%	4.09%	1.63%	20.76%
160	GENERAL ADMINISTRATION							
-1	Labor	Veh-Mi	2.1897	0.6031	0.9498	1.0061	0.6031	2.1897
-2	Contract Service	Veh-Mi	0.3958	0.0831	0.0106	0.0006	0.0006	1.4847
-3	Supplies	Veh-Mi	0.0448	0.0230	0.0103	0.0114	0.0017	0.2438
-4	Insurance	Veh-Mi	0.3092	0.1377	0.2273	0.1795	0.0060	0.6680
-5	Other Nonlabor	Veh-Mi	0.2433	-0.0061	0.0023	0.0819	-0.0061	1.0580

Platform Hours 147,500 111,744 1,464,680 407,241
 Vehicle Miles 4,593,000 2,193,600 46,865,200 31,099,400
 Route Miles 39.7 38.2 191.0 142.0

**O & M COST DATA BASE
STRATUM 2
1987 RAIL RAPID
AGGREGATED LEVEL R
COST PER UNIT OF SERVICE**

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	PATH 2098	SEPTA 3019	WMATA 3030	BALTIMORE 3034	MARTA 4022	MIAMI 4034
010	VEHICLE OPERATIONS										
-1	Operators	Plat-Hr	\$24,3455	\$16,5902	\$21,7049	\$16,7716	\$21,9271	\$25,8984	\$49,3687	\$24,2150	\$25,4337
-2	Fuel & Lube	Veh-Mi	0.0021	0.0040			0.0004	0.0001	0.0001	0.0007	
-3	Tires & Tube	Veh-Mi		0.0002			0.0004				
-4	Electricity	Veh-Mi	0.5245	0.3753	0.5851	0.4268	0.5581	0.6117	0.5149	0.2464	1.0870
-5	Contract Service	Plat-Hr	0.0041			0.1774		0.2116			1.5554
-6	Other Labor	Plat-Hr	16,5829	4,9922	13,4337	22,6753	24,5530	30,0614	41,3494	12,4953	28,7115
-7	Other Nonlabor	Plat-Hr	4,5985	3,3256	0.1103	1,9322	0.1551	0.0876	0.1793	1,6902	1,9760
041	VEHICLE MAINTENANCE										
-1	Labor	Veh-Mi	1,5388	0,9203	0,5479	1,0659	0,9195	0,8065	1,1406	0,4044	1,6559
-2	Contract Service	Veh-Mi	0,0731	0,0123	0,0748	0,0113	0,0032	0,0196	0,0120	0,0688	0,1104
-3	Fuel Lube/Service Vehicles	Veh-Mi	0,0052	0,0010	0,0065		0,0082	0,0021	0,0023		0,0018
-4	Tires Tube/Service Vehicles	Veh-Mi					0,0032	0,0004			
-5	Parts	Veh-Mi	0,3902	0,2191	0,1715	0,1730	0,3648	0,2362	0,3655	0,1245	0,5458
-6	Other Nonlabor	Veh-Mi	-0,0664	0,0193	0,0001	0,0594	-0,0908	0,0002	0,0000	-0,0001	0,0075
	Contract Service/Total	Veh-Mi	3,77%	1,05%	9,34%	0,86%	0,26%	1,84%	0,79%	11,51%	4,75%
042	NON-VEHICLE MAINTENANCE										
-1	Labor	Rte-Mi	513,589	1,025,877	95,538	523,841	259,837	285,390	338,738	132,867	21,885
-2	Contract Service	Rte-Mi	73,353	10,143	8,987	8,261	6,786	50,702	72,504	36,918	47,103
-3	Parts	Rte-Mi	55,341	89,656	14,031	77,826	36,337	47,192	49,735	28,294	20,488
-4	Other Nonlabor	Rte-Mi	(95,264)	(111,487)	0	33,370	(13,488)	6,492	1	206	18,130
	Contract Service/Total	Rte-Mi	0,1341	0,0100	0,0758	0,0128	0,0234	0,1301	0,1573	0,1862	0,4377
160	GENERAL ADMINISTRATION										
-1	Labor	Veh-Mi	1,4858	1,7911	0,9495	1,2222	1,6301	1,2368	1,8350	0,8334	1,4971
-2	Contract Service	Veh-Mi	0,0180	0,0011	0,0027	0,2895	0,0604	0,1027	0,1307	0,0815	0,3753
-3	Supplies	Veh-Mi	0,0027	0,0083	0,0157	-0,0096	0,0054	0,4179	0,0541	0,0027	0,0221
-4	Insurance	Veh-Mi	0,1963	0,0917	0,5528	0,4781	1,3678	0,1219	0,4476	0,1640	0,3470
-5	Other Nonlabor	Veh-Mi	0,5049	0,3515	0,3030	0,9486	0,2174	0,3365	0,6201	0,1600	0,1569
	Platform Hours		995,667	16,981,900	79,898	766,500	422,653	653,825	41,377	167,242	74,657
	Vehicle Miles		19,370,300	305,817,817	3,965,114	11,732,500	16,229,219	33,072,266	2,074,609	12,549,790	4,865,000
	Route Miles		76.5	481.2	30.5	27.6	80.4	139.1	14.4	54.7	39.7

O & M COST DATA BASE
 STRATUM 2
 1987 RAIL RAPID
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT DESCRIPTION	VARIABLE	CLEVELAND 5015 RR	CTA 5066	BART 9003	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS					
-1	Operators	\$35.3628	\$23.7025	\$28.8545	\$16.5902	\$49.3687
-2	Fuel & Lube	0.0141			0.0001	0.0141
-3	Tires & Tube				0.0002	0.0004
-4	Electricity	0.9817	0.4780	0.4076	0.2464	1.0870
-5	Contract Service		0.0022	0.2071	0.0022	1.5554
-6	Other Labor	11.3142	18.3048	44.2475	4.9922	44.2475
-7	Other Nonlabor	-0.0904	0.1920	28.0409	-0.0904	28.0409
041	VEHICLE MAINTENANCE					
-1	Labor	1.1080	0.6038	0.8247	0.4044	1.6559
-2	Contract Service	0.0454	0.0228	0.0425	0.0032	0.1104
-3	Fuel Lube/Service Vehicles	0.0011			0.0010	0.0082
-4	Tires Tube/Service Vehicles	0.0013			0.0004	0.0032
-5	Parts	0.3709	0.3520	0.1345	0.1245	0.5458
-6	Other Nonlabor	-0.0062	0.0545	-0.0640	-0.0908	0.0594
	Contract Service/Total	2.99%	2.21%	4.53%	0.26%	11.51%
042	NON-VEHICLE MAINTENANCE					
-1	Labor	79.513	191,774	215,451	21,885	1,025,877
-2	Contract Service	5,334	17,215	8,378	5,334	73,353
-3	Parts	8,078	20,669	15,860	8,078	89,656
-4	Other Nonlabor	122	32,505	(7,119)	(111,487)	33,370
	Contract Service/Total	0.0573	0.0657	0.0360	1.00%	43.77%
160	GENERAL ADMINISTRATION					
-1	Labor	0.8383	0.9788	1.0693	0.8334	1.8350
-2	Contract Service	0.0341	0.0096	0.0004	0.0004	0.3753
-3	Supplies	0.0087	0.0105	0.0099	-0.0096	0.4179
-4	Insurance	0.0651	0.2284	0.0904	0.0651	1.3678
-5	Other Nonlabor	0.3499	0.0005	0.0881	0.0005	0.9486

Platform Hours 99,885 1,488,720 399,977
 Vehicle Miles 2,197,890 47,464,843 30,884,962
 Route Miles 38.2 191.0 142.0

**O & M COST DATA BASE
STRATUM 2
1988 RAIL RAPID
AGGREGATED LEVEL R
COST PER UNIT OF SERVICE**

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	PATH 2098	SEPTA 3019	WMATA 3030	MTA 3034
010	VEHICLE OPERATIONS								
-1	Operators	Plat-Hr	\$25.0629	\$18.8695	\$23.2203	\$16.6482	\$22.7171	\$24.3302	\$50.0132
-2	Fuel & Lube	Veh-Mi	0.0020	0.0006			0.0004		
-3	Tires & Tube	Veh-Mi	0.0001	0.0001					
-4	Electricity	Veh-Mi	0.5063	0.3557	0.5895	0.0001	0.4549	0.5881	0.3545
-5	Contract Service	Plat-Hr	0.0070			0.0971		0.1545	
-6	Other Labor	Plat-Hr	16.9600	5.8014	13.8262	19.7791	25.2887	34.2618	27.6650
-7	Other Nonlabor	Plat-Hr	5.0561	3.4733	0.1602	1.5808	0.0330	0.1147	0.1533
041	VEHICLE MAINTENANCE								
-1	Labor	Veh-Mi	1.7690	0.9665	0.5425	1.0530	0.9205	0.7864	0.6715
-2	Contract Service	Veh-Mi	0.1189	0.0235	0.0493	0.0094	0.0032	0.0194	0.0218
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0055	0.0018	0.0068		0.0065	0.0019	0.0011
-4	Tires Tube/Service Vehicles	Veh-Mi					0.0028		0.0001
-5	Parts	Veh-Mi	0.2546	0.2713	0.1800	0.1492	0.0528	0.2408	0.1940
-6	Other Nonlabor	Veh-Mi	-0.1067	0.0180	0.0000	0.0319	-0.0877	0.0000	0.0000
	Contract Service/Total		5.83%	1.83%	6.33%	0.75%	0.35%	1.85%	2.45%
042	NON-VEHICLE MAINTENANCE								
-1	Labor	Rte-Mi	442.479	1,096.462	106,919	594,746	280,273	311,731	252,199
-2	Contract Service	Rte-Mi	142.147	12.582	10,735	23,370	7,820	51,539	34,753
-3	Parts	Rte-Mi	54,493	126,049	14,567	89,638	42,402	51,908	28,740
-4	Other Nonlabor	Rte-Mi	(105,653)	(116,612)	2	248,225	(9,913)	6,161	7
	Contract Service/Total		26.65%	1.12%	8.12%	2.44%	2.44%	12.23%	11.01%
160	GENERAL ADMINISTRATION								
-1	Labor	Veh-Mi	1.5667	1.9098	1.0264	1.2639	1.6108	1.5994	1.3898
-2	Contract Service	Veh-Mi	0.0223	0.0026	0.0054	0.0237	0.0612	0.1198	0.1429
-3	Supplies	Veh-Mi	0.0014	0.0076	0.0125	-0.0183	0.0068	0.3799	0.0399
-4	Insurance	Veh-Mi	0.2194	0.1230	0.3294	0.2562	1.2625	0.1614	0.5394
-5	Other Nonlabor	Veh-Mi	0.0114	0.3312	0.3343	1.4691	0.1592	0.3264	0.3985

Platform Hours	1,021,502	16,777,800	81,092	885,600	424,451	630,811	59,967
Vehicle Miles	20,990,300	316,138,900	4,088,100	12,584,500	16,515,600	33,394,000	4,509,900
Route Miles	76.7	488.0	30.5	27.6	76.8	139.1	26.6

O & M COST DATA BASE
 STRATUM 2
 1987 RAIL RAPID
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	CLEVELAND 5015 RR	CTA 5066	BART 9003	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS						
-1	Operators	Plat-Hr	\$35,3628	\$23,7025	\$28,8545	\$16,5902	\$49,3687
-2	Fuel & Lube	Veh-Mi	0.0141			0.0001	0.0141
-3	Tires & Tube	Veh-Mi				0.0002	0.0004
-4	Electricity	Veh-Mi	0.9817	0.4780	0.4076	0.2464	1.0870
-5	Contract Service	Plat-Hr		0.0022	0.2071	0.0022	1.5554
-6	Other Labor	Plat-Hr	11.3142	18.3048	44.2475	4.9922	44.2475
-7	Other Nonlabor	Plat-Hr	-0.0904	0.1920	28.0409	-0.0904	28.0409
041	VEHICLE MAINTENANCE						
-1	Labor	Veh-Mi	1.1080	0.6038	0.8247	0.4044	1.6559
-2	Contract Service	Veh-Mi	0.0454	0.0228	0.0425	0.0032	0.1104
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0011			0.0010	0.0082
-4	Tires Tube/Service Vehicles	Veh-Mi	0.0013			0.0004	0.0032
-5	Parts	Veh-Mi	0.3709	0.3520	0.1345	0.1245	0.5458
-6	Other Nonlabor	Veh-Mi	-0.0062	0.0545	-0.0640	-0.0908	0.0594
	Contract Service/Total		2.99%	2.21%	4.53%	0.26%	11.51%
042	NON-VEHICLE MAINTENANCE						
-1	Labor	Rte-Mi	79,513	191,774	215,451	21,885	1,025,877
-2	Contract Service	Rte-Mi	5,334	17,215	8,378	5,334	73,353
-3	Parts	Rte-Mi	8,078	20,669	15,860	8,078	89,656
-4	Other Nonlabor	Rte-Mi	122	32,505	(7,119)	(111,487)	33,370
	Contract Service/Total		0.0573	0.0657	0.0360	1.00%	43.77%
160	GENERAL ADMINISTRATION						
-1	Labor	Veh-Mi	0.8383	0.9788	1.0693	0.8334	1.8350
-2	Contract Service	Veh-Mi	0.0341	0.0096	0.0004	0.0004	0.3753
-3	Supplies	Veh-Mi	0.0087	0.0105	0.0099	-0.0096	0.4179
-4	Insurance	Veh-Mi	0.0651	0.2284	0.0904	0.0651	1.3678
-5	Other Nonlabor	Veh-Mi	0.3499	0.0005	0.0381	0.0005	0.9486

Platform Hours 99,885 1,488,720 399,977
 Vehicle Miles 2,197,890 47,464,843 30,884,962
 Route Miles 38.2 191.0 142.0

**O & M COST DATA BASE
STRATUM 2
1988 RAIL RAPID
AGGREGATED LEVEL R
COST PER UNIT OF SERVICE**

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	PATH 2098	SEPTA 3019	WMATA 3030	MTA 3034
010	VEHICLE OPERATIONS								
-1	Operators	Plat-Hr	\$25.0629	\$18.8695	\$23.2203	\$16.6482	\$22.7171	\$24.3302	\$50.0132
-2	Fuel & Lube	Veh-Mi	0.0020	0.0006			0.0004		
-3	Tires & Tube	Veh-Mi	0.0001	0.0001					
-4	Electricity	Veh-Mi	0.5063	0.3557	0.5895	0.0001	0.4549	0.5881	0.3545
-5	Contract Service	Plat-Hr	0.0070			0.0971		0.1545	
-6	Other Labor	Plat-Hr	16.9600	5.8014	13.8262	19.7791	25.2887	34.2618	27.6650
-7	Other Nonlabor	Plat-Hr	5.0561	3.4733	0.1602	1.5808	0.0330	0.1147	0.1533
041	VEHICLE MAINTENANCE								
-1	Labor	Veh-Mi	1.7690	0.9665	0.5425	1.0530	0.9205	0.7864	0.6715
-2	Contract Service	Veh-Mi	0.1189	0.0235	0.0493	0.0094	0.0032	0.0194	0.0218
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0055	0.0018	0.0068		0.0065	0.0019	0.0011
-4	Tires Tube/Service Vehicles	Veh-Mi					0.0028		0.0001
-5	Parts	Veh-Mi	0.2546	0.2713	0.1800	0.1492	0.0528	0.2408	0.1940
-6	Other Nonlabor	Veh-Mi	-0.1067	0.0180	0.0000	0.0319	-0.0877	0.0000	0.0000
	Contract Service/Total		5.83%	1.83%	6.33%	0.75%	0.35%	1.85%	2.45%
042	NON-VEHICLE MAINTENANCE								
-1	Labor	Rte-Mi	442.479	1,096.462	106.919	594.746	280.273	311.731	252.199
-2	Contract Service	Rte-Mi	142.147	12.582	10.735	23.370	7.820	51.539	34,753
-3	Parts	Rte-Mi	54.493	126.049	14,567	89,638	42,402	51,908	28,740
-4	Other Nonlabor	Rte-Mi	(105,653)	(116,612)	2	248,225	(9,913)	6,161	7
	Contract Service/Total		26.65%	1.12%	8.12%	2.44%	2.44%	12.23%	11.01%
160	GENERAL ADMINISTRATION								
-1	Labor	Veh-Mi	1.5667	1.9098	1.0264	1.2639	1.6108	1.5994	1.3898
-2	Contract Service	Veh-Mi	0.0223	0.0026	0.0054	0.2237	0.0612	0.1198	0.1429
-3	Supplies	Veh-Mi	0.0014	0.0076	0.0125	-0.0183	0.0068	0.3799	0.0399
-4	Insurance	Veh-Mi	0.2194	0.1230	0.3294	0.2562	1.2625	0.1614	0.5394
-5	Other Nonlabor	Veh-Mi	0.0114	0.3312	0.3343	1.4691	0.1592	0.3264	0.3985

Platform Hours	1,021,502	16,777,800	81,092	885,600	424,451	630,811	59,967
Vehicle Miles	20,990,300	316,138,900	4,088,100	12,584,500	16,515,600	33,394,000	4,509,900
Route Miles	76.7	488.0	30.5	27.6	76.8	139.1	26.6

O & M COST DATA BASE
 STRATUM 2
 1988 RAIL RAPID
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MARTA 4022	MIAMI 4034	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS								
-1	Operators	Plat-Hr	\$24.4228	\$25.6769	\$35.2348	\$24.3950	\$30.5323	\$16.6482	\$50.0132
-2	Fuel & Lube	Veh-Mi	0.0001		0.0167			0.0001	0.0167
-3	Tires & Tube	Veh-Mi						0.0001	0.0001
-4	Electricity	Veh-Mi	0.2313	0.9548	1.0237	0.3788	0.3286	0.0001	1.0237
-5	Contract Service	Plat-Hr		5.7953		0.0070	0.1286	0.0070	5.7953
-6	Other Labor	Plat-Hr	12.3212	20.7350	13.5327	18.8848	44.9169	5.8014	44.9169
-7	Other Nonlabor	Plat-Hr	0.1243	0.0000	-0.0300	0.4804	27.6977	-0.0300	27.6977
041	VEHICLE MAINTENANCE								
-1	Labor	Veh-Mi	0.3097	1.6937	1.2267	0.5423	0.8395	0.3097	1.7690
-2	Contract Service	Veh-Mi	0.1629	0.0053	0.0812	0.0097	0.0507	0.0032	0.1629
-3	Fuel Lube/Service Vehicles	Veh-Mi			0.0014			0.0011	0.0068
-4	Tires Tube/Service Vehicles	Veh-Mi			0.0002			0.0001	0.0028
-5	Parts	Veh-Mi	0.0562	0.3671	0.2179	0.2767	0.1367	0.0528	0.3671
-6	Other Nonlabor	Veh-Mi	-0.0003	0.0303	0.0035	0.0463	-0.0782	-0.1067	0.0463
	Contract Service/Total		30.82%	0.25%	5.31%	1.11%	5.34%	0.25%	30.82%
042	NON-VEHICLE MAINTENANCE								
-1	Labor	Rte-Mi	125.136	19,094	84,045	224,952	223,995	19,094	1,096,462
-2	Contract Service	Rte-Mi	37,725	55,764	7,092	27,076	10,678	7,092	142,147
-3	Parts	Rte-Mi	23,692		5,819	29,732	15,410	5,819	126,049
-4	Other Nonlabor	Rte-Mi	(40)	14,010	1,245	36,604	(8,777)	(116,612)	248,225
	Contract Service/Total		20.23%	62.75%	7.22%	8.50%	4.43%	1.12%	62.75%
160	GENERAL ADMINISTRATION								
-1	Labor	Veh-Mi	1.0264	1.2738	0.8955	0.9224	1.0942	0.8955	1.9098
-2	Contract Service	Veh-Mi	0.0210	0.6730	0.0518	0.0171	0.0008	0.0008	0.6730
-3	Supplies	Veh-Mi	0.0041	0.0000	0.0139	0.0106	0.0101	-0.0183	0.3799
-4	Insurance	Veh-Mi	0.2081	0.5954	0.0240	0.1547	0.1168	0.0240	1.2625
-5	Other Nonlabor	Veh-Mi	0.1874	0.2126	0.4926	0.0364	0.0641	0.0114	1.4691

Platform Hours 192,836
 Vehicle Miles 13,493,900
 Route Miles 67.0

124,313
 2,184,300
 38.2

72,775
 5,149,000
 42.4

1,527,262
 55,824,400
 191.0

402,944
 32,571,100
 142.0

Stratum 2
Light Rail

O & M COST DATA BASE
 STRATUM 2
 1986 LIGHT RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	NJTC 2080	SEPTA 3019	PAT 3022	Cleveland 5015	New Orleans 6032	MUNI 9015
010	VEHICLE OPERATIONS									
-1	Operators	Plat-Hr	\$22.6234	\$26.7978	\$19.7501	\$22.3984	\$36.4969	\$23.2016	\$37.8521	\$26.2741
-2	Fuel & Lube	Veh-Mi		0.0046	0.0006	0.2733	0.0017	0.0002		0.0020
-3	Tires & Tube	Veh-Mi					0.0000			
-4	Electricity	Veh-Mi	0.1233	1.2400	0.5945	0.3928	0.7146	0.9551	0.9884	0.1624
-5	Contract Service	Plat-Hr	0.0145	0.0004				0.0216	0.0921	0.2487
-6	Other Labor	Plat-Hr	4.2364	13.9886	5.2039	1.7594	15.8768	6.7674	2.1224	12.4948
-7	Other Nonlabor	Plat-Hr	0.0486	10.7562	0.0417	-0.0483	13.6687	0.0892	0.7243	0.5571
041	VEHICLE MAINTENANCE									
-1	Labor	Veh-Mi	3.4023	4.2568	1.2776	1.7039	2.6635	1.0056		2.6837
-2	Contract Service	Veh-Mi	0.0193	0.2888	0.0007	0.0001	0.0676	0.2036	0.0305	0.0988
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0078	0.0146					0.2204	
-4	Tires Tube/Service Vehicles	Veh-Mi	0.0010							
-5	Parts	Veh-Mi	0.2718	0.8003	0.2353	0.5915	0.4038	0.3042	0.3039	0.2310
-6	Other Nonlabor	Veh-Mi	0.0053	-0.1975		-0.3485	0.4044	0.0471	0.0379	0.3092
	Contract Service/Total		0.529%	5.599%		0.01%		13.05%	5.14%	2.97%
042	NON-VEHICLE MAINTENANCE									
-1	Labor	Rte-Mi	13.536	82.704	10,953	26,901	210,586	52,602	26,061	108,038
-2	Contract Service	Rte-Mi	8.333	8,566	1,144	1,550	1,533	3,606	134	5,421
-3	Parts	Rte-Mi	2,114	3,933	13,783	9,116	36,520	2,955	3,993	5,875
-4	Other Nonlabor	Rte-Mi	8	(27,728)	0	(1,302)	(52,162)	5,415	253	7,471
	Contract Service/Total		34.73%	12.70%	4.42%	4.28%	0.78%	5.58%	0.44%	4.28%
160	GENERAL ADMINISTRATION									
-1	Labor	Veh-Mi	0.6817	1.6424	0.4881	0.4473	0.5126	0.5994		0.2169
-2	Contract Service	Veh-Mi	0.0203	0.0220	0.1329	0.0230	0.1487	0.0826	0.2482	0.4548
-3	Supplies	Veh-Mi	0.0039	0.0015	0.0179	0.0033	0.0078	0.0228	0.0242	0.0008
-4	Insurance	Veh-Mi	0.0868	2.1997	0.1214	0.6234	0.0909	0.1368	0.2747	0.1705
-5	Other Nonlabor	Veh-Mi	0.5105	0.8645	0.3222	0.2420	0.5011	-0.0061	0.0689	0.0772

Platform Hours	2,782	112,901	38,152	665,899	93,352	76,165	77,369	442,403
Vehicle Miles	34,000	1,079,400	574,500	5,604,200	1,343,300	1,090,600	669,200	4,067,000
Route Miles	3.2	55.9	8.3	165.7	29.8	26.0	13.2	47.1

O & M COST DATA BASE
 STRATUM 2
 1986 LIGHT RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	San Diego 9054	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS				
-1	Operators	Plat-Hr	\$10.3129	\$10.3129	\$37.8521
-2	Fuel & Lube	Veh-Mi		0.0002	0.2733
-3	Tires & Tube	Veh-Mi		0.0000	0.0000
-4	Electricity	Veh-Mi	0.5453	0.1233	1.2400
-5	Contract Service	Plat-Hr	0.4382	0.0004	0.4382
-6	Other Labor	Plat-Hr	6.5315	1.7594	15.8768
-7	Other Nonlabor	Plat-Hr	0.7181	-0.0483	13.6687
041	VEHICLE MAINTENANCE				
-1	Labor	Veh-Mi	0.4087	0.4087	4.2568
-2	Contract Service	Veh-Mi	0.0685	0.0001	0.2888
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0021	0.0005	0.2204
-4	Tires Tube/Service Vehicles	Veh-Mi		0.0010	0.0015
-5	Parts	Veh-Mi	0.0995	0.0995	0.8003
-6	Other Nonlabor	Veh-Mi	0.0245	-0.3485	0.4044
	Contract Service/Total		11.35%	0.01%	13.05%
042	NON-VEHICLE MAINTENANCE				
-1	Labor	Rte-Mi	11,999	10,953	210,586
-2	Contract Service	Rte-Mi	2,407	134	8,566
-3	Parts	Rte-Mi	7,581	2,114	36,520
-4	Other Nonlabor	Rte-Mi	2,740	(52,162)	7,471
	Contract Service/Total		9.73%	0.44%	34.73%
160	GENERAL ADMINISTRATION				
-1	Labor	Veh-Mi	0.2554	0.2169	1.6424
-2	Contract Service	Veh-Mi	0.3559	0.0203	0.4548
-3	Supplies	Veh-Mi		0.0008	0.0242
-4	Insurance	Veh-Mi	0.1984	0.0868	2.1997
-5	Other Nonlabor	Veh-Mi	0.0835	-0.0061	0.8645

Platform Hours 81,900
 Vehicle Miles 1,834,400
 Route Miles 41.0

O & M COST DATA BASE
 STRATUM 2
 1987 LIGHT RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	TRI-MET 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	NEW ORLEANS 6032	MUNI 9015
010	VEHICLE OPERATIONS								
-1	Operators	Plat-Hr	\$18.2381	\$26.9076	\$21.9266	\$29.3910	\$24.8959	\$28.3041	\$27.2149
-2	Fuel & Lube	Veh-Mi		0.0037	0.0005		0.0162		
-3	Tires & Tube	Veh-Mi		1.1805	0.0004	0.7482	0.9076	1.0052	0.2776
-4	Electricity	Veh-Mi	0.4712	0.0005	0.6899			0.1155	0.2552
-5	Contract Service	Plat-Hr	9.7743	14.3217	2.9519	16.0541	8.2220	3.4614	12.7895
-6	Other Labor	Plat-Hr	0.7966	10.8600	0.0229	12.5511	-0.0660	0.2706	0.0581
-7	Other Nonlabor	Plat-Hr							
041	VEHICLE MAINTENANCE								
-1	Labor	Veh-Mi	1.2111	4.0401	2.0533	2.9063	1.2641	0.6748	2.8059
-2	Contract Service	Veh-Mi	0.0371	0.2646	0.0008	0.0698	0.0521	0.0174	0.0988
-3	Fuel Lube/Service Vehicles	Veh-Mi		0.0112	0.0202	0.0560	0.0013	0.1797	
-4	Tires Tube/Service Vehicles	Veh-Mi		0.7308	0.0020	0.0023	0.0014		
-5	Parts	Veh-Mi	0.1113	0.7494	0.7494	0.1261	0.4247	0.2899	0.5102
-6	Other Nonlabor	Veh-Mi	0.0443	-0.1707	-0.2609	0.3590	-0.0071	0.0517	0.3617
	Contract Service/Total		2.64%	5.43%	0.03%	1.98%	3.00%	1.43%	2.62%
042	NON-VEHICLE MAINTENANCE								
-1	Labor	Rte-Mi	5,952	94,223	32,420	201,774	66,890	51,840	111,778
-2	Contract Service	Rte-Mi	390	3,886	1,234	3,358	4,495	332	5,017
-3	Parts	Rte-Mi	7	8,715	7,683	31,866	6,798	832	4,273
-4	Other Nonlabor	Rte-Mi	(1,310)	(30,354)	(1,192)	(41,021)	106	736	2,207
	Contract Service/Total		7.74%	5.08%	3.07%	1.71%	5.74%	0.62%	4.07%
160	GENERAL ADMINISTRATION								
-1	Labor	Veh-Mi	0.8293	1.4366	0.5152	0.6810	0.9738		0.1883
-2	Contract Service	Veh-Mi	0.1563	0.0231	0.0370	0.0976	0.0391	0.3867	0.3872
-3	Supplies	Veh-Mi	0.0216	0.0048	0.0028	0.0110	0.0100	0.0305	0.0013
-4	Insurance	Veh-Mi	0.1323	1.5860	0.8372	0.1418	0.0871	0.4903	0.1724
-5	Other Nonlabor	Veh-Mi	0.6559	1.0987	0.1344	0.6693	0.4016	0.1031	0.0665
	Platform Hours		54,844	108,985	615,603	106,058	78,309	56,843	419,007
	Vehicle Miles		1,105,592	1,075,923	5,054,289	1,435,983	1,098,348	653,171	4,058,512
	Route Miles		25.2	49.8	165.7	34.1	26.0	13.2	47.1

O & M COST DATA BASE
 STRATUM 2
 1987 LIGHT RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	SAN DIEGO 9054	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS				
-1	Operators	Plat-Hr	\$9.5935	\$9.5935	\$29.3910
-2	Fuel & Lube	Veh-Mi		0.0005	0.0162
-3	Tires & Tube	Veh-Mi		0.0004	0.0004
-4	Electricity	Veh-Mi	0.5210	0.2776	1.1805
-5	Contract Service	Plat-Hr	0.4271	0.0005	0.4271
-6	Other Labor	Plat-Hr	5.5337	2.9519	16.0541
-7	Other Nonlabor	Plat-Hr	0.7295	-0.0660	12.5511
041	VEHICLE MAINTENANCE				
-1	Labor	Veh-Mi	0.4527	0.4527	4.0401
-2	Contract Service	Veh-Mi	0.0879	0.0008	0.2646
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0032	0.0013	0.1797
-4	Tires Tube/Service Vehicles	Veh-Mi		0.0014	0.0023
-5	Parts	Veh-Mi	0.0714	0.0714	0.7494
-6	Other Nonlabor	Veh-Mi	0.0174	-0.2609	0.3617
	Contract Service/Total		13.90%	0.03%	13.90%
042	NON-VEHICLE MAINTENANCE				
-1	Labor	Rte-Mi	15,152	5,952	201,774
-2	Contract Service	Rte-Mi	1,236	332	5,017
-3	Parts	Rte-Mi	6,172	7	31,866
-4	Other Nonlabor	Rte-Mi	1,865	(41,021)	2,207
	Contract Service/Total		5.06%	0.62%	7.74%
160	GENERAL ADMINISTRATION				
-1	Labor	Veh-Mi	0.2812	0.1883	1.4366
-2	Contract Service	Veh-Mi	0.3679	0.0231	0.3872
-3	Supplies	Veh-Mi		0.0013	0.0305
-4	Insurance	Veh-Mi	0.2092	0.0871	1.5860
-5	Other Nonlabor	Veh-Mi	0.0934	0.0665	1.0987

Platform Hours 114,500
 Vehicle Miles 2,082,757
 Route Miles 41.0

O & M COST DATA BASE
 STRATUM 2
 1988 LIGHT RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	SEATTLE 0001	PORTLAND 0008	MBTA 1003	NJTC 2080	SEPTA 3019	PAT 3022	CLEVELAND 5015	NEW ORLEANS 6032	SCCTD 9013
010	VEHICLE OPERATIONS										
-1	Operators	Plat-Hr	\$22.1808	\$31.9209	\$28.2381	\$21.3845	\$22.7149	\$23.4514	\$25.5471	\$21.0735	\$45.1228
-2	Fuel & Lube	Veh-Mi	0.0000	0.0119	0.0034	0.0000	0.0000	0.0000	0.0187	0.0000	0.0000
-3	Tires & Tube	Veh-Mi	0.1392	0.3689	1.1343	0.4368	0.7126	0.7191	0.9574	0.5082	1.1796
-4	Electricity	Veh-Mi	0.0995	0.0311	0.0021	0.0000	0.0000	0.0000	0.0000	0.0183	0.0000
-5	Contract Service	Plat-Hr	4.7100	16.8481	14.9963	3.8415	3.1311	10.1492	10.0204	3.7505	35.4198
-6	Other Labor	Plat-Hr	0.0852	0.1134	13.4934	0.0000	0.0072	0.2019	-0.0227	0.1017	4.7425
-7	Other Nonlabor	Plat-Hr									
041	VEHICLE MAINTENANCE										
-1	Labor	Veh-Mi	5.0176	0.9841	4.3980	1.5141	1.9323	2.1168	1.3899	0.7620	3.9499
-2	Contract Service	Veh-Mi	0.0983	0.0071	0.3881	0.0000	0.0004	0.0001	0.0920	0.0091	0.0510
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0047	0.0024	0.0112	0.0000	0.0036	0.0074	0.0016	0.0145	0.0010
-4	Tires Tube/Service Vehicles	Veh-Mi	0.0005	0.0000	0.0000	0.0000	0.0016	0.0016	0.0002	0.0000	0.0000
-5	Parts	Veh-Mi	0.4051	0.1922	0.4744	0.1032	0.5156	0.0992	0.2469	0.2605	0.0055
-6	Other Nonlabor	Veh-Mi	0.0130	0.0235	-0.2658	0.0000	-0.1639	-0.0240	0.0039	0.0000	0.1331
	Contract Service/Total	Veh-Mi	1.77%	0.58%	7.75%		0.02%		5.31%	0.87%	1.23%
042	NON-VEHICLE MAINTENANCE										
-1	Labor	Rte-Mi	23557	24578	76098	11625	32601	165623	69353	43724	57035
-2	Contract Service	Rte-Mi	35618	2231	8796	5201	730	3512	5817	585	1799
-3	Parts	Rte-Mi	8801	3179	7177	7095	6939	35830	4797	2378	5590
-4	Other Nonlabor	Rte-Mi	2464	-1	-30649	21315	-969	-35769	1007	0	121
	Contract Service/Total	Rte-Mi	50.56%	7.44%	14.32%	11.50%	1.86%	2.08%	7.18%	1.25%	2.79%
160	GENERAL ADMINISTRATION										
-1	Labor	Veh-Mi	2.3941	1.0276	1.5920	0.5704	0.4648	0.6616	1.0056	0.6541	3.7854
-2	Contract Service	Veh-Mi	0.5936	0.0043	0.0279	0.2111	0.0338	0.0791	0.0581	0.4194	0.4305
-3	Supplies	Veh-Mi	0.1294	0.0233	0.0020	0.0268	0.0038	0.0111	0.0156	0.0868	0.0046
-4	Insurance	Veh-Mi	0.4444	0.0842	1.0229	0.1616	0.6985	0.1600	0.0367	0.4759	1.4432
-5	Other Nonlabor	Veh-Mi	0.2622	0.6015	-0.0146	0.0705	0.0870	0.4262	0.5524	0.1738	2.2876
	Platform Hours		6,500	45,174	101,592	41,172	613,642	192,022	94,366	55,647	15,700
	Vehicle Miles		31,200	1,420,400	1,125,500	626,100	5,427,600	2,252,100	1,084,000	662,600	233,900
	Route Miles		2.8	30.2	55.9	8.3	147.6	41.1	26.0	16.3	17.4

O & M COST DATA BASE
 STRATUM 2
 1988 LIGHT RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MUNI 9015	SAN DIEGO 9054	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS					
-1	Operators	Plat-Hr	\$28.7258	\$10.8229	\$10.8229	\$45.1228
-2	Fuel & Lube	Veh-Mi			0.0034	0.0187
-3	Tires & Tube	Veh-Mi	0.0000	0.0000	0.0000	0.0000
-4	Electricity	Veh-Mi	0.2877	0.5205	0.1392	1.1796
-5	Contract Service	Plat-Hr	0.5350	0.3034	0.0021	0.5350
-6	Other Labor	Plat-Hr	21.4285	5.6790	3.1311	35.4198
-7	Other Nonlabor	Plat-Hr	-0.0111	0.2491	-0.0227	13.4934
041	VEHICLE MAINTENANCE					
-1	Labor	Veh-Mi	2.8346	0.5535	0.5535	5.0176
-2	Contract Service	Veh-Mi	0.1206	0.0824	0.0001	0.3881
-3	Fuel Lube/Service Vehicles	Veh-Mi		0.0120	0.0010	0.0145
-4	Tires Tube/Service Vehicles	Veh-Mi			0.0002	0.0016
-5	Parts	Veh-Mi	0.4013	0.1226	0.0055	0.5156
-6	Other Nonlabor	Veh-Mi	0.4416	0.0243	-0.2658	0.4416
	Contract Service/Total		3.18%	10.37%	0.02%	10.37%
042	NON-VEHICLE MAINTENANCE					
-1	Labor	Rte-Mi	119239	10153	10153	165623
-2	Contract Service	Rte-Mi	1419	1780	585	35618
-3	Parts	Rte-Mi	3561	6227	2378	35830
-4	Other Nonlabor	Rte-Mi	-6446	1306	-35769	21315
	Contract Service/Total		1.20%	9.15%	1.20%	50.56%
160	GENERAL ADMINISTRATION					
-1	Labor	Veh-Mi	0.4146	0.3189	0.3189	3.7854
-2	Contract Service	Veh-Mi	0.7679	0.4408	0.0043	0.7679
-3	Supplies	Veh-Mi	0.0025		0.0020	0.1294
-4	Insurance	Veh-Mi	0.2852	0.2461	0.0367	1.4432
-5	Other Nonlabor	Veh-Mi	0.0415	0.0819	-0.0146	2.2876

Platform Hours 413,044 117,600
 Vehicle Miles 4,056,800 2,140,800
 Route Miles 49.7 41.0

**Stratum 2
Commuter Rail**

O & M COST DATA BASE
 STRATUM 2
 1986 COMMUTER RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	B&M/MBTA 1071	MTNR 2078	NJTC 2080	SEPTA 3019	Chicago Commuter 5118	Illinois Central 5120	Chicago N Western 5121	Burlington Northern 5122	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS											
-1	Operators	Veh-Hr	\$73.0383	\$50.6236	\$40.5738	\$39.1469	\$53.2780	\$67.5677	\$46.6419	\$59.1213	\$39.1469	\$73.0383
-2	Fuel & Lube	Veh-Mi	0.4117	0.0596	0.2392	0.2912	0.3651	0.0240	0.3569	0.3775	0.0240	0.4117
-3	Tires & Tube	Veh-Mi		0.6771	0.5520	0.0000		1.3449			0.0000	0.0000
-4	Electricity	Veh-Mi		0.8289	6.0948		0.9352	0.4597		9.2508	0.5520	1.3449
-5	Contract Service	Veh-Hr		13.4495	8.0079	13.1608	28.8939	29.5123	25.0046	44.2731	0.4597	9.2508
-6	Other Labor	Veh-Hr		-11.8545	0.6439	-0.1217	6.4983	12.4224	8.5058	5.5414	8.0079	44.2731
-7	Other Nonlabor	Veh-Hr	32.5567								-11.8545	32.5567
041	VEHICLE MAINTENANCE											
-1	Labor	Veh-Mi	1.6439	1.7670	0.8552	0.9911	1.4579	2.1402	1.0042	0.6247	0.6247	2.1402
-2	Contract Service	Veh-Mi		0.7041	0.2176	0.0391	0.0633	0.0092		0.0817	0.0092	0.7041
-3	Fuel Lube/Service Vehicles	Veh-Mi		0.0073	0.0072	0.0212	0.0080				0.0072	0.0212
-4	Tires Tube/Service Vehicles	Veh-Mi				0.0031					0.0031	0.0031
-5	Parts	Veh-Mi	0.6111	0.6287	0.7072	0.5441	0.2305	0.9579	0.1266	0.4639	0.1266	0.9579
-6	Other Nonlabor	Veh-Mi	0.7224	0.1657	0.0263	-0.0037	0.1841	0.1998	0.2674	0.0183	-0.0037	0.7224
	Contract Service/Total		0.0%	21.5%	12.0%	2.5%	3.3%	0.3%	0.0%	6.9%	0.0%	21.5%
042	NON-VEHICLE MAINTENANCE											
-1	Labor	Rte-Mi	*	133298	33922	36866	26532	66215	27141	18066	18066	133298
-2	Contract Service	Rte-Mi	*	5292	11497	11682	6501	6554	638	5997	638	11682
-3	Parts	Rte-Mi	*	16681	4874	9137	16179	8314	2910	3472	2910	16681
-4	Other Nonlabor	Rte-Mi	*	22662	3227	30213	-1810	-352	9013	1338	-1810	30213
	Contract Service/Total		15.3%	3.0%	21.5%	13.3%	13.7%	8.1%	1.6%	20.8%	1.6%	
160	GENERAL ADMINISTRATION											
-1	Labor	Veh-Mi	0.6753	1.4256	0.7861	1.0694	1.3371	0.2731	0.2579	0.3349	0.2579	1.4256
-2	Contract Serv	Veh-Mi		0.4653	0.1805	0.0503	0.4410	0.2815	0.0504	0.0874	0.0503	0.4653
-3	Supplies	Veh-Mi	0.1260	0.1245	0.0727	0.0127	0.0652	0.0314	0.0017	0.0000	0.0000	0.1260
-4	Insurance	Veh-Mi	0.0556	0.3470	0.2437	0.5238	0.4889	1.4884	0.4559	1.1108	0.0556	1.4884
-5	Other Nonlabor	Veh-Mi	0.3369	0.1170	0.1595	1.0467	-0.0657	0.3731	0.2847	0.2790	-0.0657	1.0467

Vehicle Hours	243,100	1,036,700	921,800	510,900	231,700	134,700	352,600	122,300
Vehicle Miles	7,875,200	35,101,000	32,903,800	12,260,100	7,371,700	3,964,400	11,956,500	4,240,200
Route Miles	*	536.3	751.6	440.4	261.4	155.6	309.4	76.0

* Route miles for B & M/MBTA commuter rail service were not reported in 1986; therefore cost per unit of service is not calculated

O & M COST DATA BASE
 STRATUM 2
 1987 COMMUTER RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	B&M/MBTA 1071	MTNR 2078	NJTC 2080	Staten Island 2099	LIRR 2100	SEPTA 3019	Chicago Commuter 5118	Chicago N Western 5121	Burlington Northern 5122	
010	VEHICLE OPERATIONS											
-1	Operators	Veh-Hr	\$91.8823	\$50.2011	\$40.2301	\$31.0154	\$51.6528	\$46.4265	\$61.6136	\$49.2721	\$59.7214	
-2	Fuel & Lube	Veh-Mi	0.3429	0.0466	0.1489		0.0717	0.0002	0.2733	0.3875	0.4306	
-3	Tires & Tube	Veh-Mi						0.0002				
-4	Electricity	Veh-Mi		0.7128	0.5120	0.2423	0.5590		0.4478		6.4645	
-5	Contract Service	Veh-Hr		0.4898	5.9167		1.6238		2.4137		41.9767	
-6	Other Labor	Veh-Hr		12.4756	10.9447	31.4808	23.1751	31.6205	36.8705	24.5123		
-7	Other Nonlabor	Veh-Hr	32.5091	-3.9064	0.8592	3.5370	3.6824	1.7693	4.8143	9.8196	6.7575	
041	VEHICLE MAINTENANCE											
-1	Labor	Veh-Mi	1.5723	1.6834	0.9520	0.5005	1.6803	1.3786	1.8409	1.0681	0.6578	
-2	Contract Service	Veh-Mi		0.0321	0.2254		0.0398	0.0234	0.0717		0.1296	
-3	Fuel Lube/Service Vehicles	Veh-Mi		0.0014	0.0084		0.0044	0.0249	0.0005			
-4	Tires Tube/Service Vehicles	Veh-Mi						0.0040				
-5	Parts	Veh-Mi	0.5553	0.6516	0.6729	0.0615	0.4864	1.6779	0.4145	0.1407	0.6326	
-6	Other Nonlabor	Veh-Mi	0.6720	-0.0329	0.0271	0.0776	0.0343	0.0024	0.1518	0.2844	0.0317	
	Contract Service/Total		0.0%	1.4%	12.0%	0.0%	1.8%	0.8%	2.9%	0.0%	8.9%	
042	NON-VEHICLE MAINTENANCE											
-1	Labor	Rte-Mi	7157	140437	33638	76327	170663	46800	43912	29449	26577	
-2	Contract Service	Rte-Mi		6465	10291		10829	13593	5385	462	7539	
-3	Parts	Rte-Mi	2261	16506	4081	9378	19738	10515	8113	2357	4953	
-4	Other Nonlabor	Rte-Mi	3886	16457	3442	11840	-54717	30474	-778	8754	2578	
	Contract Service/Total		0.0%	3.6%	20.0%	0.0%	7.4%	13.4%	9.5%	1.1%	18.1%	
160	GENERAL ADMINISTRATION											
-1	Labor	Veh-Mi	0.3332	1.4579	0.9724	0.9240	0.8985	1.0837	1.0285	0.2542	0.3455	
-2	Contract Serv	Veh-Mi		0.4464	0.2956		0.1379	0.0786	0.4721	0.0710	0.1912	
-3	Supplies	Veh-Mi	0.1158	0.0844	0.0606	0.1135	0.0424	0.0085	0.0513	0.0021	0.0409	
-4	Insurance	Veh-Mi	0.0499	0.3972	0.3191	0.3756	0.3780	0.6209	0.5024	0.3083	0.2325	
-5	Other Nonlabor	Veh-Mi	0.3396	0.1897	0.2312	0.1433	-0.2100	1.1251	-0.0501	0.3467	0.2988	
	Vehicle Hours		120,400	1,074,000	940,200	105,400	1,899,000	445,700	372,700	354,900	121,100	
	Vehicle Miles		4,379,500	36,361,600	33,037,100	2,268,000	59,879,400	11,035,000	11,789,900	12,012,200	4,186,600	
	Route Miles		493.3	535.5	751.4	28.6	623.3	440.4	417.0	309.4	74.4	

O & M COST DATA BASE
 STRATUM 2
 1987 COMMUTER RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT DESCRIPTION	VARIABLE	CALTRANS 9075	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS			
-1	Operators	\$34,6237	\$31,0154	\$91,8823
-2	Fuel & Lube	0.4408	0.0002	0.4408
-3	Tires & Tube		0.0002	0.0002
-4	Electricity		0.2423	0.7128
-5	Contract Service	1.4313	0.4898	6.4645
-6	Other Labor	100.7663	10.9447	100.7663
-7	Other Nonlabor	29.5822	-3.9064	32.5091
041	VEHICLE MAINTENANCE			
-1	Labor	0.6888	0.5005	1.8409
-2	Contract Service		0.0234	0.2254
-3	Fuel Lube/Service Vehicles	0.0053	0.0005	0.0249
-4	Tires Tube/Service Vehicles		0.0040	0.0040
-5	Parts	0.1331	0.0615	1.6779
-6	Other Nonlabor	0.1492	-0.0329	0.6720
	Contract Service/Total	0.0%	0.0%	12.0%
042	NON-VEHICLE MAINTENANCE			
-1	Labor	5959	5959	170663
-2	Contract Service		462	13593
-3	Parts		2261	19738
-4	Other Nonlabor	0	-54717	30474
	Contract Service/Total	0.0%	0.0%	20.0%
160	GENERAL ADMINISTRATION			
-1	Labor	1.0599	0.2542	1.4579
-2	Contract Serv	0.0028	0.0028	0.4721
-3	Supplies		0.0021	0.1158
-4	Insurance	0.2624	0.0499	0.6209
-5	Other Nonlabor	0.2383	-0.2100	1.1251

Vehicle Hours 68,400
 Vehicle Miles 2,341,400
 Route Miles 93.8

O & M COST DATA BASE
STRATUM 2

1988 COMMUTER RAIL
AGGREGATED LEVEL R

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MTNR 2078	NJTC 2080	Staten Island 2099	LIRR 2100	SEPTA 3019	Chicago Commuter 5118	Chicago N Western 5121	Burlington Northern 5122	CALTRANS 9075	
010	VEHICLE OPERATIONS											
-1	Operators	Veh-Hr	\$51.8315	\$39.3140	\$35.9720	\$46.0052	\$46.9550	\$58.9972	\$51.1564	\$57.8638	\$39.8113	
-2	Fuel & Lube	Veh-Mi	0.0495	0.2084		0.0483	0.0007	0.2461	0.3584	0.3700	0.5654	
-3	Tires & Tube	Veh-Mi										
-4	Electricity	Veh-Mi	0.6537	0.4348	0.1313	0.5208	0.9786	0.4495		1.7450	1.3448	
-5	Contract Service	Veh-Hr	0.4160	4.1021		1.8706	2.9316	2.9316		42.9796	108.9496	
-6	Other Labor	Veh-Hr	12.7430	9.2970		24.5425	31.5950	42.2192	25.8615			
-7	Other Nonlabor	Veh-Hr	-7.6535	0.8141	1.6061	2.5250	1.1718	5.5466	10.3400	14.3562	1.3059	
041	VEHICLE MAINTENANCE											
-1	Labor	Veh-Mi	1.7076	1.0942	0.9859	1.6829	1.3620	1.8203	1.1778	0.6917	0.7616	
-2	Contract Service	Veh-Mi	0.0303	0.1878		0.0413	0.0139	0.0957		0.0005		
-3	Fuel Lube/Service Vehicles	Veh-Mi	0.0015	0.0042		0.0048	0.0223	0.0012			0.0054	
-4	Tires Tube/Service Vehicles	Veh-Mi					0.0037					
-5	Parts	Veh-Mi	0.5478	0.6915	0.0854	0.4279	0.9285	0.4548	0.1574	0.4997	0.1232	
-6	Other Nonlabor	Veh-Mi	-0.0800	0.0272	0.0334	0.0182	-0.0054	0.1405	0.3743	0.1478	0.0103	
	Contract Service/Total		1.4%	9.4%	0.0%	1.9%	0.6%	3.8%	0.0%	0.0%	0.0%	
042	NON-VEHICLE MAINTENANCE											
-1	Labor	Rte-Mi	138137	37286	151547	177571	60780	44521	32102	23362	5959	
-2	Contract Service	Rte-Mi	5419	11059		8964	17948	7609	-19			
-3	Parts	Rte-Mi	14835	5118	13575	12695	16478	9431	2676	6866		
-4	Other Nonlabor	Rte-Mi	11085	3872	5303	-59422	-3404	-802	12813	8119		
	Contract Service/Total		3.2%	19.3%	0.0%	6.4%	19.6%	12.5%	0.0%	0.0%	0.0%	
160	GENERAL ADMINISTRATION											
-1	Labor	Veh-Mi	1.4319	0.9152	1.8545	0.9553	1.1366	1.1233	0.2431	0.3974	1.2293	
-2	Contract Service	Veh-Mi	0.4213	0.3343		0.1390	0.0794	0.5828	0.0680	0.0831	0.0053	
-3	Supplies	Veh-Mi	0.0848	0.0272	0.1652	0.0339	0.0140	0.0470	0.0016	0.0150		
-4	Insurance	Veh-Mi	0.5917	0.3226		0.3218	0.7983	0.3048	0.1765	0.2048	0.2485	
-5	Other Nonlabor	Veh-Mi	0.1837	0.1518	0.0645	-0.1940	0.8483	-0.0529	0.3161	0.4319	0.0860	
	Vehicle Hours		1,068,200	1,059,800	105,600	2,189,200	464,700	392,200	351,400	125,200	76,100	
	Vehicle Miles		38,285,000	33,858,900	2,272,400	65,708,000	11,509,300	12,446,200	11,743,800	4,346,800	2,473,000	
	Route Miles		535.3	755.2	28.6	623.3	375.6	417.0	309.4	74.4	93.8	

O & M COST DATA BASE
 STRATUM 2
 1988 COMMUTER RAIL
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT DESCRIPTION	VARIABLE	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS		
-1	Operators Veh-Hr	\$35.9720	\$58.9972
-2	Fuel & Lube Veh-Mi	0.0007	0.5654
-3	Tires & Tube Veh-Mi		
-4	Electricity Veh-Mi	0.1313	0.9786
-5	Contract Service Veh-Hr	0.4160	4.1021
-6	Other Labor Veh-Hr	9.2970	108.9496
-7	Other Nonlabor Veh-Hr	-7.6535	14.3562
041	VEHICLE MAINTENANCE		
-1	Labor Veh-Mi	0.6917	1.8203
-2	Contract Service Veh-Mi	0.0005	0.1878
-3	Fuel Lube/Service Vehicles Veh-Mi	0.0012	0.0223
-4	Tires Tube/Service Vehicles Veh-Mi	0.0037	0.0037
-5	Parts Veh-Mi	0.0854	0.9285
-6	Other Nonlabor Veh-Mi	-0.0800	0.3743
	Contract Service/Total	0.0%	9.4%
042	NON-VEHICLE MAINTENANCE		
-1	Labor Rte-Mi	5959	177571
-2	Contract Service Rte-Mi	-19	17948
-3	Parts Rte-Mi	2676	16478
-4	Other Nonlabor Rte-Mi	-59422	12813
	Contract Service/Total	0.0%	19.6%
160	GENERAL ADMINISTRATION		
-1	Labor Veh-Mi	0.2431	1.8545
-2	Contract Service Veh-Mi	0.0053	0.5828
-3	Supplies Veh-Mi	0.0016	0.1652
-4	Insurance Veh-Mi	0.1765	0.7983
-5	Other Nonlabor Veh-Mi	-0.1940	0.8483

Vehicle Hours
 Vehicle Miles
 Route Miles

**Stratum 2
Motor Bus**

O & M COST DATA BASE
 STRATUM 2
 1986 MOTOR BUS
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	Milwaukee 5008	Chicago Sub Bus Division 5113	Minneapolis 5027	Dallas 6004	Houston 6008	San Antonio 6011	Bi State 7006	Denver 8006
010	VEHICLE OPERATIONS										
-1	Operators	Plat-Hr	\$20.9005	\$20.5046	\$21.9249	\$23.5542	\$15.2686	\$24.7610	\$15.0581	\$19.8934	\$20.3901
-2	Fuel & Lube	Veh-Mi	0.1216	0.1678	0.1457	0.1411	0.2046	0.1776	0.2395	0.2108	0.1331
-3	Tires & Tubes	Veh-Mi	0.0392	0.0185	0.0241	0.0221	0.0300	0.0453	0.0240	0.0186	0.0472
-4	Electricity	Veh-Mi	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
-5	Contract Service	Plat-Hr	0.0134	0.0056	0.1952	0.0025	0.0001	0.1365	1.5868	1.7634	0.0477
-6	Other Labor	Plat-Hr	4.1253	2.2142	2.8594	2.0160	1.9813	4.7006	0.4206	0.2305	2.3203
-7	Other Nonlabor	Plat-Hr	0.0483	0.0526	0.0796	0.0053	0.4647	0.4575	0.0000	0.0000	0.0942
041	VEHICLE MAINTENANCE										
-1	Labor	Veh-Mi	0.4054	0.5283	0.4744	0.5362	0.4473	0.6109	0.2804	0.5659	0.5424
-2	Contract Service	Veh-Mi	0.0022	0.0018	0.0407	0.0002	0.0041	0.0132	0.0003	0.0003	0.0174
-3	Fuel/Lube Service Vehicle	Veh-Mi	0.0045	0.0015	0.0037	0.0019	0.0044	0.0094	0.0029	0.0064	0.0018
-4	Tire/Tube Service Vehicles	Veh-Mi	0.0006	0.0001	0.0043	0.0001	0.0004	0.2723	0.1307	0.0003	0.0011
-5	Parts	Veh-Mi	0.2291	0.2470	0.1906	0.1533	0.2365	0.0000	0.0003	0.1632	0.2768
-6	Other Nonlabor	Veh-Mi	0.0031	-0.0025	0.0000	0.0000	0.0018	0.0000	0.0000	0.0007	0.0046
	Contract Service/Total		0.35%	0.23%	5.70%	0.03%	0.60%	1.45%	7.93%	0.04%	2.06%
042	NON-VEHICLE MAINTENANCE										
-1	Labor	Veh-Mi	0.1385	0.0603	0.0069	0.0730	0.0678	0.0904	0.0534	0.1081	0.1078
-2	Contract Service	Veh-Mi	0.0163	0.0172	0.0097	0.0071	0.0080	0.0185	0.0064	0.0200	0.0559
-3	Parts	Veh-Mi	0.0241	0.0394	0.0071	0.0118	0.0242	0.0257	0.0204	0.0237	0.0257
-4	Other Nonlabor	Veh-Mi	0.0025	0.0002	0.0050	0.0001	0.0007	0.0440	0.0000	0.0002	0.0720
	Contract Service/Total		9.00%	14.66%	33.39%	7.71%	7.92%	10.35%	13.16%	13.16%	21.39%
160	GENERAL ADMINISTRATION										
-1	Labor	Veh-Mi	0.3278	0.2215	0.3573	0.2821	0.2061	0.2062	0.2067	0.3125	0.4006
-2	Contract Service	Veh-Mi	0.0010	0.0941	0.1561	0.0043	-0.0002	0.0339	0.0035	0.0349	0.0046
-3	Supplies	Veh-Mi	0.0005	0.0151	0.0220	0.0053	0.0000	0.0000	0.0035	0.0091	0.0014
-4	Claims/Insurance	Veh-Mi	0.0634	0.0676	0.0749	0.1174	0.0238	0.2582	0.0217	0.1044	0.0424
-6	Other Nonlabor	Veh-Mi	0.2293	0.0742	0.1105	0.1089	0.1221	0.0325	0.1718	0.2982	0.1350

Platform Hours 2,137,829 1,551,158 540,826 2,037,928 1,562,416 2,529,654 1,055,706 1,870,196 2,025,242
 Vehicle Miles 33,726,600 18,882,300 8,414,800 28,616,000 22,638,800 37,351,200 15,575,400 25,455,200 29,689,900

O & M COST DATA BASE
 STRATUM 2
 1986 MOTOR BUS
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	AC Transit 9014	SCRTD 9021	Orange County 9036	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS						
-1	Operators	Plat-Hr	\$24,1404	\$25,9407	\$24,0211	\$15,0581	\$25,9407
-2	Fuel & Lube	Veh-Mi	0.0450	0.2255	0.1962	0.0450	0.2395
-3	Tires & Tubes	Veh-Mi	0.0326	0.0413	0.0461	0.0185	0.0472
-4	Electricity	Veh-Mi	0.0000	0.0000	0.0000	0.0000	0.0000
-5	Contract Service	Plat-Hr	0.0129	0.1565		0.0001	0.1952
-6	Other Labor	Plat-Hr	2.8256	3.6350	3.7033	1.5868	4.7006
-7	Other Nonlabor	Plat-Hr	0.1808	0.3270	0.1816	0.0053	0.4647
041	VEHICLE MAINTENANCE						
-1	Labor	Veh-Mi	0.4377	0.8410	0.4880	0.2804	0.8410
-2	Contract Service	Veh-Mi	0.0051	0.0212	0.0124	0.0002	0.0407
-3	Fuel/Lube Service Vehicle	Veh-Mi	0.0001	0.0072	0.0036	0.0001	0.0094
-4	Tire/Tube Service Vehicles	Veh-Mi		0.0003	0.0003	0.0001	0.0043
-5	Parts	Veh-Mi	0.2042	0.2347	0.1759	0.1307	0.2768
-6	Other Nonlabor	Veh-Mi	0.1328	-0.0167	0.0003	-0.0167	0.1328
	Contract Service/Total		0.65%	1.95%	1.82%	0.03%	5.70%
042	NON-VEHICLE MAINTENANCE						
-1	Labor	Veh-Mi	0.0571	0.1045	0.0468	0.0069	0.1081
-2	Contract Service	Veh-Mi	0.0112	0.0006	0.0599	0.0006	0.0599
-3	Parts	Veh-Mi	0.0030	0.0308	0.0055	0.0030	0.0394
-4	Other Nonlabor	Veh-Mi	0.0006	-0.0005	0.0000	-0.0005	0.0720
	Contract Service/Total		15.62%	0.42%	53.36%	0.42%	53.36%
160	GENERAL ADMINISTRATION						
-1	Labor	Veh-Mi	0.3478	0.4613	0.4380	0.2061	0.4613
-2	Contract Service	Veh-Mi	0.0431	0.1171	0.0012	0.0010	0.2062
-3	Supplies	Veh-Mi	0.0051	0.0224	0.0015	-0.0002	0.0339
-4	Claims/Insurance	Veh-Mi	0.1532	0.3303	0.1191	0.0217	0.3303
-6	Other Nonlabor	Veh-Mi	0.1917	-0.0658	0.2285	-0.0658	0.2982

Platform Hours 2,161,404 7,652,308 1,178,521
 Vehicle Miles 31,140,700 105,550,900 18,074,500

O & M COST DATA BASE
 STRATUM 2
 1987 MOTOR BUS
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Chicago Sub Bus Division 5113	City of Detroit 5119	Dallas 6004	Houston 6008	San Antonio 6011
010	VEHICLE OPERATIONS										
-1	Operators	Plat-Hr	\$16.6257	\$21.0530	\$21.9481	\$24.1909	\$21.6214	\$26.0271	\$16.4306	\$15.4251	\$15.7904
-2	Fuel & Lube	Veh-Mi	0.1318	0.1353	2.7933	0.1695	0.1524	0.1394	0.1811	0.1440	0.1375
-3	Tires & Tube	Veh-Mi	0.0475	0.0237	0.6652	0.0188	0.0268	0.0457	0.0349	0.0448	0.0257
-4	Electricity	Veh-Mi	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
-5	Contract Service	Plat-Hr	0.0232	0.0016	0.0079	0.0029	0.1325	0.0000	0.0000	0.0864	0.0000
-6	Other Labor	Plat-Hr	12.1162	2.2515	2.8381	2.1112	3.6003	3.4226	2.3213	5.0074	1.5248
-7	Other Nonlabor	Plat-Hr	0.1991	0.0615	0.5273	0.0089	0.1394	0.0000	0.7343	0.9654	0.4258
041	VEHICLE MAINTENANCE										
-1	Labor	Veh-Mi	0.4933	0.5181	11.4669	0.5579	0.4790	0.8074	0.4821	0.7277	0.2851
-2	Contract Service	Veh-Mi	0.0026	0.0010	0.0500	0.0004	0.0965	0.2381	0.0052	0.0109	0.0009
-3	Fuel Lube/Service Vehicle	Veh-Mi	0.0040	0.0351	0.0351	0.0018	0.0004	0.0052	0.0030	0.0053	0.0002
-4	Tires Tube/Service Vehicle	Veh-Mi	0.0005	0.0027	0.0027	0.0002	0.1934	0.0012	0.2344	0.1929	0.1398
-5	Parts	Veh-Mi	0.2719	0.1898	3.6047	0.1319	0.0000	0.2255	0.0025	-0.0403	0.0002
-6	Other Nonlabor	Veh-Mi	-0.0127	0.0007	0.0086	0.0004	0.0000	0.0000	0.0025	1.22%	0.0002
	Contract Service/Total		0.35%	0.14%	0.33%	0.06%	12.55%	18.64%	0.71%		
042	NON-VEHICLE MAINTENANCE										
-1	Labor	Veh-Mi	0.1559	0.0699	1.5331	0.0767	0.0123	0.1692	0.0728	0.0685	0.0510
-2	Contract Service	Veh-Mi	0.0206	0.0166	0.4274	0.0067	0.0243	0.0323	0.0172	0.0225	0.0061
-3	Parts	Veh-Mi	0.0140	0.0419	0.2146	0.0160	0.0116	0.0361	0.0234	0.0245	0.0179
-4	Other Nonlabor	Veh-Mi	0.0133	0.0016	0.0002	0.0002	50.51%	13.58%	0.0004	0.0612	8.13%
	Contract Service/Total		10.13%	12.79%	19.65%	6.72%			15.15%	12.71%	
160	GENERAL ADMINISTRATION										
-1	Labor	Veh-Mi	0.3717	0.2382	4.9610	0.2888	0.5492	0.3352	0.2303	0.7264	0.2060
-2	Contract Service	Veh-Mi	0.1237	0.0015	0.0702	0.0068	0.2586	0.2774	-0.0001	0.0112	0.0032
-3	Supplies	Veh-Mi	0.0231	0.0042	0.0027	0.0050	0.0375	0.0050	0.0000	0.0000	0.0036
-4	Insurance	Veh-Mi	0.0808	0.0392	0.7410	0.1238	0.1493	0.2115	0.0466	0.1656	0.0266
-5	Other Nonlabor	Veh-Mi	0.0816	0.1857	4.4774	0.1573	0.1756	0.1381	0.1049	-0.1627	0.1362

Platform Hours 2,088,020 1,532,940 797,945 2,029,220 562,325 1,726,847 1,344,454 2,377,444 1,129,501
 Vehicle Miles 31,626,200 18,641,700 671,900 28,346,000 8,571,500 23,049,600 21,115,300 32,558,100 16,807,500

O & M COST DATA BASE
 STRATUM 2
 1987 MOTOR BUS
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Bi State 7006	Denver 8006	AC Transit 9014	SCRTD 9021	Orange County 9036	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS								
-1	Operators	Plat-Hr	\$20.0895	\$21.1691	\$25.8459	\$25.5455	\$23.4611	\$15.4251	\$26.0271
-2	Fuel & Lube	Veh-Mi	0.1342	0.1414	0.0992	0.1449	0.1322	0.0992	2.7933
-3	Tires & Tube	Veh-Mi	0.0249	0.0370	0.0439	0.0451	0.0427	0.0188	0.6652
-4	Electricity	Veh-Mi	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
-5	Contract Service	Plat-Hr		0.0041	0.0211	0.1753		0.0016	0.1753
-6	Other Labor	Plat-Hr	1.7263	2.5167	2.8870	3.5943	4.1688	1.5248	5.0074
-7	Other Nonlabor	Plat-Hr	0.0107	0.0761	0.1467	0.2780	0.1296	0.0089	0.9654
041	VEHICLE MAINTENANCE								
-1	Labor	Veh-Mi	0.6039	0.5281	0.4814	0.8179	0.5180	0.2851	11.4669
-2	Contract Service	Veh-Mi	0.0008	0.0151	0.0063	0.0097	0.0169	0.0004	0.2381
-3	Fuel Lube/Service Vehicle	Veh-Mi	0.0046	0.0021	0.0006	0.0053	0.0034	0.0004	0.0351
-4	Tires Tube/Service Vehicle	Veh-Mi	0.0005	0.0006		0.0003	0.0002	0.0002	0.0027
-5	Parts	Veh-Mi	0.2240	0.2237	0.1858	0.2116	0.1910	0.1319	3.6047
-6	Other Nonlabor	Veh-Mi	0.0035	-0.0056	0.0265	-0.0145	0.0002	-0.0403	0.0265
	Contract Service/Total		0.10%	1.97%	0.91%	0.94%	2.31%	0.06%	18.64%
042	NON-VEHICLE MAINTENANCE								
-1	Labor	Veh-Mi	0.0987	0.1170	0.0645	0.1115	0.0559	0.0123	1.5331
-2	Contract Service	Veh-Mi	0.0212	0.0549	0.0114	0.0005	0.0587	0.0005	0.4274
-3	Parts	Veh-Mi	0.0265	0.0249	0.0109	0.0377	0.0053	0.0053	0.2146
-4	Other Nonlabor	Veh-Mi	0.0003	0.0876	0.0005			0.0002	0.0876
	Contract Service/Total		14.44%	19.30%	13.04%	0.34%	48.96%	0.34%	50.51%
160	GENERAL ADMINISTRATION								
-1	Labor	Veh-Mi	0.4506	0.4472	0.3743	0.4661	0.5061	0.2060	4.9610
-2	Contract Service	Veh-Mi	0.0429	0.0039	0.0474	0.1373	0.0010	0.0010	0.2774
-3	Supplies	Veh-Mi	0.0093	0.0031	0.0069	0.0222	0.0019	-0.0001	0.0375
-4	Insurance	Veh-Mi	0.1097	0.0442	0.1339	0.3240	0.0207	0.0207	0.7410
-5	Other Nonlabor	Veh-Mi	0.3002	0.1303	0.2237	-0.0695	0.2549	-0.1627	4.4774

Platform Hours 1,820,294 1,883,531 2,226,301 7,874,119 1,155,276
 Vehicle Miles 24,842,100 28,292,700 31,309,800 107,780,000 17,286,400

O & M COST DATA BASE
STRATUM 2

1988 MOTOR BUS

AGGREGATED LEVEL R

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Chicago Sub Bus Division 5113	City of Detroit 5119	Houston 6008	San Antonio 6011	Bi State 7006
010	VEHICLE OPERATIONS										
-1	Operators	Plat-Hr	\$22.7908	\$21.8488	\$23.3029	\$25.4581	\$21.3896	\$25.3317	\$16.3385	\$15.9176	\$21.0333
-2	Fuel & Lube	Veh-Mi	0.1302	0.1613	0.1437	0.1593	0.1288	0.1690	0.1500	0.1482	0.1499
-3	Tires & Tube	Veh-Mi	0.0398	0.0038	0.0410	0.0237	0.0314	0.0435	0.0419	0.0254	0.0277
-4	Electricity	Veh-Mi	0.0038	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
-5	Contract Service	Plat-Hr	0.0719	0.0012	0.0183	0.0021	0.1208	3.7121	0.0884	1.6258	3.6455
-6	Other Labor	Plat-Hr	4.8513	2.3829	2.9729	2.3086	3.6297	5.728	5.728	1.6258	3.6455
-7	Other Nonlabor	Plat-Hr	0.0912	0.1374	0.5605	0.0062	0.0509	0.2057	0.2057	0.6168	0.0177
041	VEHICLE MAINTENANCE										
-1	Labor	Veh-Mi	0.5260	0.5650	0.6790	0.6036	0.4813	0.7994	0.6464	0.2962	0.4154
-2	Contract Service	Veh-Mi	0.0113	0.0007	0.0047	0.0006	0.0963	0.2955	0.0095	0.0011	0.0011
-3	Fuel Lube/Service Vehicle	Veh-Mi	0.0101		0.0012	0.0021	0.0079	0.0051	0.0080	0.0019	0.0046
-4	Tires Tube/Service Vehicle	Veh-Mi	0.0005		0.0005	0.0002	0.0011	0.0011	0.0002	0.0002	0.0006
-5	Parts	Veh-Mi	0.2959	0.1924	0.1898	0.1320	0.1954	0.2026	0.1945	0.1204	0.2142
-6	Other Nonlabor	Veh-Mi	-0.0041	0.0003	0.0009	0.0006	0.0000	0.0000	0.0579	0.0002	0.0020
	Contract Service/Total		1.34%	0.09%	0.53%	0.08%	12.33%	22.66%	1.03%	0.01%	0.16%
042	NON-VEHICLE MAINTENANCE										
-1	Labor	Veh-Mi	0.1648	0.0763	0.0997	0.0819	0.0075	0.1722	0.1052	0.0585	0.0810
-2	Contract Service	Veh-Mi	0.0354	0.0307	0.0242	0.0074	0.0792	0.0229	0.0245	0.0065	0.0313
-3	Parts	Veh-Mi	0.0310	0.0423	0.0138	0.0157	0.0100	0.0398	0.0267	0.0279	0.0363
-4	Other Nonlabor	Veh-Mi	0.0314	0.0019	0.0003	0.0001	0.0071	0.0000	0.0100	0.0000	0.0009
	Contract Service/Total		13.49%	20.30%	17.57%	7.06%	76.36%	9.74%	14.74%	7.00%	20.92%
160	GENERAL ADMINISTRATION										
-1	Labor	Veh-Mi	0.4158	0.2606	0.3378	0.3175	0.5406	0.3072	0.7210	0.2174	0.2997
-2	Contract Service	Veh-Mi	0.1048	0.0019	0.0017	0.0076	0.3374	0.2379	0.0112	0.0034	0.0461
-3	Supplies	Veh-Mi	0.0224	0.0039	0.0002	0.0058	0.0401	0.0113	0.0001	0.0037	0.0092
-4	Insurance	Veh-Mi	0.0737	0.0264	0.0520	0.0161	0.2379	0.1844	0.0971	0.0231	0.0945
-5	Other Nonlabor	Veh-Mi	0.0455	0.1985	0.2900	0.1879	0.1966	0.1571	-0.0591	0.1416	0.3234
	Platform Hours		2,129,855	1,539,913	786,048	1,985,672	590,609	1,845,089	2,319,062	1,144,495	1,795,113
	Vehicle Miles		31,468,600	18,837,100	10,997,700	27,382,100	9,105,600	24,769,500	33,479,100	17,022,800	25,071,800

O & M COST DATA BASE
 STRATUM 2
 1988 MOTOR BUS
 AGGREGATED LEVEL R
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Denver 8006	AC Transit 9014	SCRTD 9021	Orange County 9036	MINIMUM	MAXIMUM
010	VEHICLE OPERATIONS							
-1	Operators	Plat-Hr	\$21.9412	\$27.1074	\$27.7867	\$24.7121	\$15.9176	\$27.7867
-2	Fuel & Lube	Veh-Mi	0.1279	0.1469	0.1833	0.1642	0.1279	0.1833
-3	Tires & Tube	Veh-Mi	0.0387	0.0399	0.0564	0.0535	0.0038	0.0564
-4	Electricity	Veh-Mi	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
-5	Contract Service	Plat-Hr	0.0031	0.0031	0.0129	0.0000	0.0012	0.1208
-6	Other Labor	Plat-Hr	2.6297	2.8787	3.9114	4.0295	1.6258	5.5728
-7	Other Nonlabor	Plat-Hr	0.0791	0.1251	0.3153	0.1749	0.0062	0.6168
041	VEHICLE MAINTENANCE							
-1	Labor	Veh-Mi	0.5529	0.4900	0.8820	0.4984	0.2962	0.8820
-2	Contract Service	Veh-Mi	0.0092	0.0084	0.0028	0.0296	0.0006	0.2955
-3	Fuel Lube/Service Vehicle	Veh-Mi	0.0019	0.0026	0.0060	0.0039	0.0012	0.0080
-4	Tires Tube/Service Vehicle	Veh-Mi	0.0006	0.0006	0.0003	0.0001	0.0001	0.0011
-5	Parts	Veh-Mi	0.2454	0.1622	0.1584	0.2228	0.1204	0.2454
-6	Other Nonlabor	Veh-Mi	-0.0013	0.0064	-0.0109	0.0002	-0.0109	0.0579
	Contract Service/Total		1.13%	1.26%	0.27%	3.92%	0.01%	22.66%
042	NON-VEHICLE MAINTENANCE							
-1	Labor	Veh-Mi	0.1287	0.0767	0.1037	0.0618	0.0075	0.1722
-2	Contract Service	Veh-Mi	0.0378	0.0200	0.0001	0.0580	0.0001	0.0792
-3	Parts	Veh-Mi	0.0201	0.0127	0.0324	0.0047	0.0047	0.0423
-4	Other Nonlabor	Veh-Mi	0.0999	0.0002	0.0001	0.0001	0.0001	0.0999
	Contract Service/Total		13.18%	18.26%	0.11%	46.58%	0.11%	76.36%
160	GENERAL ADMINISTRATION							
-1	Labor	Veh-Mi	0.4400	0.4380	0.5233	0.5323	0.2174	0.7210
-2	Contract Service	Veh-Mi	0.0042	0.0546	0.1480	0.0002	0.0002	0.3374
-3	Supplies	Veh-Mi	0.0046	0.0087	0.0252	0.0015	0.0001	0.0401
-4	Insurance	Veh-Mi	0.0413	0.1455	0.2122	0.0466	0.0161	0.2379
-5	Other Nonlabor	Veh-Mi	0.1392	0.2462	-0.0727	0.2651	-0.0727	0.3234

Platform Hours 1,846,141 2,163,930 7,775,213 1,180,949
 Vehicle Miles 27,895,600 29,423,900 108,215,400 18,066,400

Stratum 3
Rail Rapid

O & M COST DATA BASE
 STRATUM 3
 1986 RAIL RAPID
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CTA 5066	BART 9003	MINIMUM	MAXIMUM
011	VEHICLE OPERATIONS										
-1	TRANSPORTATION ADMIN										
-1	Labor	Plat-Hr	\$3.4919	\$0.5974	\$7.8157		\$4.6808	\$5.7724	\$12.1605	\$0.5974	\$12.1605
-2	Nonlabor	Plat-Hr	-0.1431	0.0305	0.1623		0.0881	0.1159	-0.1471	-0.1471	0.1623
012	VEHICLE MOVEMENT CONTROL										
-1	Labor	Plat-Hr	11.3456	3.9562	3.1273	9.6580	9.2473	0.8108	5.3545	0.8108	11.3456
-2	Nonlabor	Plat-Hr	-0.5344	0.0051		-0.0306	0.0007	0.0185	0.0298	-0.5344	0.0298
021	SCHEDULING										
-1	Labor	Plat-Hr	0.4690	0.0584	0.9772	1.8259	0.6851	1.1482	2.6191	0.0584	2.6191
-2	Contract Service	Plat-Hr	0.0017					0.0023	0.2070	0.0017	0.2070
-3	Other Nonlabor	Plat-Hr	-0.0223	0.0000		-0.0621	0.0004	0.0181	0.0376	-0.0621	0.0376
031	REVENUE VEHICLE OPERATIONS										
-1	Operators	Plat-Hr	24.3453	16.1201	20.7288	21.6456	22.6900	24.3124	26.9198	16.1201	26.9198
-2	Fuel & Lube	Veh-Mi	0.0027	0.0034		0.4535	0.0002	0.0000		0.0000	0.4535
-3	Tires & Tubes	Veh-Mi		0.0005		0.0000				0.0000	0.0005
-4	Electricity	Veh-Mi	0.5786	0.3378	0.6201	0.5588	0.2621	0.4878	0.4601	0.2621	0.6201
-5	Other Labor	Plat-Hr	0.3160	0.1242		6.6767		10.0580	21.3750	0.1242	21.3750
-6	Other Nonlabor	Plat-Hr	5.8827	3.7207		-0.0494	0.0012	0.0667	11.9900	-0.0494	11.9900
	Platform Hours		970,893	16,796,300	80,259	377,634	168,436	1,464,680	407,241		
	Vehicle Miles		18,224,200	299,538,200	3,912,100	15,810,400	12,156,500	46,865,200	31,099,400		
	Route Miles		76.6	481.2	30.5	80.4	51.5	191.0	142.0		
	Passengers		143,746,900	1,591,525,900	10,367,400	88,357,300	65,548,000	145,347,600	63,959,400		
	Stations		50	463	12	74	25	143	34		

O & M COST DATA BASE
 STRATUM 3
 1986 RAIL RAPID
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CTA 5066	BART 9003	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE										
	MAINTENANCE ADMINISTRATION										
-1	Labor	Veh-Mi	0.3887	0.2093	0.0555	0.2294	0.0583	0.0329	0.1152	0.0329	0.3887
-2	Nonlabor	Veh-Mi	-0.0176	0.0079		-0.0202	0.0021	0.0024	-0.0295	-0.0295	0.0079
051	SERVICING REVENUE VEHICLES;										
061	INSPECTION & MAINTENANCE;										
062	ACCIDENT REPAIRS;										
071	VANDALISM REPAIRS										
-1	Labor	Veh-Mi	1.1079	0.6415	0.4917	0.5505	0.2655	0.5070	0.6131	0.2655	1.1079
-2	Contract Service	Veh-Mi	0.0778	0.0215	0.0770	0.0034	0.0594	0.0187	0.0533	0.0034	0.0778
-3	Parts	Veh-Mi	0.3508	0.2446	0.1389	0.3069	0.1124	0.2877	0.1279	0.1124	0.3508
-4	Other Nonlabor	Veh-Mi	-0.0521	0.0000		-0.0491	-0.0020	0.0430	-0.0285	-0.0521	0.0430
081	SERVICING SERVICE VEHICLES;										
091	INSPECTION & MAINTENANCE										
-1	Labor	Veh-Mi	0.0641	0.0176	0.0190	0.0178	0.0043	0.0201	0.0545	0.0043	0.0641
-2	Contract Service	Veh-Mi	0.0198	0.0014	0.0003	0.0014	0.0038	0.0010	0.0054	0.0003	0.0198
-3	Fuel/Lube Service Vehicles	Veh-Mi	0.0066	0.0012	0.0086	0.0014	0.0001	0.0000		0.0000	0.0086
-4	Tires/Tubes Service Vehicles	Veh-Mi				0.0026				0.0026	0.0026
-5	Parts	Veh-Mi		0.0100	0.0135	0.0102	0.0156	0.0053	0.0214	0.0053	0.0214
-6	Other Nonlabor	Veh-Mi	-0.0030	0.0000		-0.0007	-0.0003	0.0003	-0.0008	-0.0030	0.0003

Platform Hours	970,893	16,796,300	80,259	377,634	168,436	1,464,680	407,241
Vehicle Miles	18,224,200	299,538,200	3,912,100	15,810,400	12,156,500	46,865,200	31,099,400
Route Miles	76.6	481.2	30.5	80.4	51.5	191.0	142.0
Passengers	143,746,900	1,591,525,900	10,367,400	88,357,300	65,548,000	145,347,600	63,959,400
Stations	50	463	12	74	25	143	34

O & M COST DATA BASE
STRATUM 3

1986 RAIL RAPID

LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CTA 5066	BART 9003	MINIMUM	MAXIMUM
042	NON-VEHICLE MAINTENANCE										
-1	Maintenance Administration	Rte-Mi	79529	177725	9659	8463	6275	1219	17758	1219	177725
-2	Labor	Rte-Mi	-3662	8678		-237	180	35	-2464	-3662	8678
101	MOVEMENT CONTROL										
-1	Labor	Rte-Mi	70386	112744	795	27119	33680	23313	42201	795	112744
-2	Contract Service	Rte-Mi	6822	44	6		27	6743	79	6	6822
-3	Parts	Rte-Mi		9240	169	1863	1549	2184	704	169	9240
-4	Other Nonlabor	Rte-Mi	-3274	0		-831	281	422	-2370	-3274	422
111	FARE COLLECTION/COUNTING										
-1	Labor	Stations	18257	9979	29528	9242	8932	5970	85328	5970	85328
-2	Contract Service	Stations	240					240	2783	240	2783
-3	Parts	Stations	295	454	6680	1176	1893	802	14991	295	14991
-4	Other Nonlabor	Stations	-840	0		0		122	-1806	-1806	122
126	COMMUNICATION SYSTEMS										
-1	Labor	Rte-Mi	7451	8464	1845		15113	889	13015	889	15113
-2	Contract Service	Rte-Mi	1539	64	121		18	18	54	18	1539
-3	Parts	Rte-Mi	199	532	1532		3973	62	1020	62	3973
-4	Other Nonlabor	Rte-Mi	-350	0			281	19	-1043	-1043	281
121	ROADWAY/TRACK										
-1	Labor	Rte-Mi	128529	235235	13471	70496	42129	26733	21847	13471	235235
-2	Contract Service	Rte-Mi	17235	1132	508	3273	1508	422	809	422	17235
-3	Parts	Rte-Mi		66133	2544	12695	3036	3457	1219	1219	66133
-4	Other Nonlabor	Rte-Mi	-5999	16		-7607	0	654	-1652	-7607	654
122	STRUCTURES/TUNNEL/SUBWAY										
-1	Labor	Rte-Mi	25492	70854	2670	426		16194	13968	426	70854
-2	Contract Service	Rte-Mi	31	3100	35		1106	2361	92	31	3100
-3	Parts	Rte-Mi	2878	9351		958		2721	493	35	9351
-4	Other Nonlabor	Rte-Mi	-1172	3		-69		490	-1656	-1656	490
	Platform Hours		970,893	16,796,300	80,259	377,634	168,436	1,464,680	407,241		
	Vehicle Miles		18,224,200	299,538,200	3,912,100	15,810,400	12,156,500	46,865,200	31,099,400		
	Route Miles		76.6	481.2	30.5	80.4	51.5	191.0	142.0		
	Passengers		143,746,900	1,591,525,900	10,367,400	88,357,300	65,548,000	145,347,600	63,959,400		
	Stations		50	463	12	74	25	143	34		

O & M COST DATA BASE
 STRATUM 3
 1986 RAIL RAPID
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CTA 5066	BART 9003	MINIMUM	MAXIMUM
123	PASSENGER STATIONS;										
124	OPERATING STAT BLDG GROUNDS EQUIP;										
125	GARAGE/SHOP BLDG;										
127	GENERAL ADMIN BLDG GROUNDS EQUIP;										
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;										
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP										
-1	Labor	Rte-Mi	119084	206570	25849	72152	22286	90699	70336	22286	206570
-2	Contract Service	Rte-Mi	59563	15103	5844	6385	25952	3530	7367	3530	59563
-3	Parts	Rte-Mi	21410	19415	5269	14257	11220	7089	7904	5269	21410
-4	Other Nonlabor	Rte-Mi	-5550	1		-1800	-228	5780	-1655	-5550	5780
141	OPERATION/MAINT POWER FACILITIES										
-1	Labor	Stations	110353	128341	71418	61913	16741	35778	50058	16741	128341
-2	Contract Service	Stations	14855	24	4680	690	560	81	362	24	14855
-3	Parts	Stations		6345		8885	10795	3050	1574	1574	10795
-4	Other Nonlabor	Stations	-125208	-134711		-1935		33796	-4899	-134711	33796
	Platform Hours		970,893	16,796,300	80,259	377,634	168,436	1,464,680	407,241		
	Vehicle Miles		18,224,200	299,538,200	3,912,100	15,810,400	12,156,500	46,865,200	31,099,400		
	Route Miles		76.6	481.2	30.5	80.4	51.5	191.0	142.0		
	Passengers		143,746,900	1,591,525,900	10,367,400	88,357,300	65,548,000	145,347,600	63,959,400		
	Stations		50	463	12	74	25	143	34		

O & M COST DATA BASE
STRATUM 3

1986 RAIL RAPID
LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CTA 5066	BART 9003	MINIMUM	MAXIMUM
145	GENERAL ADMINISTRATION										
-1	PRELIMINARY TRANSIT SYSTEM DEVELOP	Veh-Mi	0.0076			0.0793				0.0067	0.0793
-2	labor	Veh-Mi	0.0004	0.0067		-0.0383	0.0000			-0.0383	0.0039
151	TICKETING/FARE COLLECTION										
-1	Labor	Passengers	0.1086	0.0916	0.0695	0.1456	0.0074	0.1834	0.0448	0.0074	0.1834
-2	Supplies	Passengers	0.0002	0.0025	0.0046	0.0011	0.0006	0.0033	0.0055	0.0002	0.0055
-3	Other Nonlabor	Passengers	-0.0041	0.0006	0.0069	-0.0002	0.0004	0.0150	0.0032	-0.0041	0.0150
161	SYSTEM SECURITY										
-1	Labor	Stations	80338	462777	106592	19608	91562	976	225134	976	462777
-2	Contract Service	Stations	5920	605	1309	8341	4757	3485	556	556	8341
-3	Other Nonlabor	Stations	-3633	2816	532	44	163	65	-247	-3633	2816
165	INJURIES/DAMAGES										
-1	Labor	Veh-Mi	0.0241	0.0156	0.0109	0.0467	0.0034	0.0289	0.0037	0.0034	0.0467
-2	Claims	Veh-Mi	0.1409	0.1200	0.1458	0.9480	0.0000	0.2212	0.1263	0.0000	0.9480
-3	Other Nonlabor	Veh-Mi	-0.0011	0.0003		0.0259	0.0009	0.0206	0.0012	-0.0011	0.0259
166	SAFETY										
-1	Labor	Veh-Mi	0.0180	0.0080	0.0141	0.0093	0.0071	0.0089	0.0341	0.0071	0.0341
-2	Nonlabor	Veh-Mi	0.0003	0.0082	0.0001	0.0021		0.0005	0.0009	0.0001	0.0082
167	PERSONNEL										
-1	Labor	Veh-Mi	0.0444	0.0695	0.0249	0.0727	0.0238	0.0452	0.0586	0.0238	0.0727
-2	Nonlabor	Veh-Mi	0.0136	0.0250	0.0014	-0.0051	-0.0035	0.0112	0.0307	-0.0051	0.0307
168	LEGAL										
-1	Labor	Veh-Mi	0.0163	0.0020		0.0385	0.0138	0.0084	0.0309	0.0020	0.0385
-2	Nonlabor	Veh-Mi	0.0025	0.0162	0.0368	0.0261	-0.0008	0.0008	0.0057	-0.0008	0.0368
169	INSURANCE										
-1	Labor	Veh-Mi	0.0020	0.0036	0.0063	-0.0000	0.0092	0.0059	0.0015	-0.0000	0.0092
-2	Insurance	Veh-Mi	0.0990	0.0003	0.1743	0.1100	0.1167	0.0061	0.0532	0.0003	0.1743
-2	Other Nonlabor	Veh-Mi	-0.0001	0.0009	0.0064	0.1100	0.0026	0.0003	0.0031	-0.0001	0.0064
	Platform Hours		970,893	16,796,300	80,259	377,634	168,436	1,464,680	407,241		
	Vehicle Miles		18,224,200	299,538,200	3,912,100	15,810,400	12,156,500	46,865,200	31,099,400		
	Route Miles		76.6	481.2	30.5	80.4	51.5	191.0	142.0		
	Passengers		143,746,900	1,591,525,900	10,367,400	88,357,300	65,548,000	145,347,600	63,959,400		
	Stations		50	463	12	74	25	143	34		

O & M COST DATA BASE
 STRATUM 3
 1986 RAIL RAPID
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CTA 5066	BART 9003	MINIMUM	MAXIMUM
170	DATA PROCESSING										
-1	Labor	Veh-Mi	0.0377	0.0406	0.0491	0.0564	0.0289	0.0423	0.0571	0.0289	0.0571
-2	Nonlabor	Veh-Mi	-0.0004	0.0491	0.0081	0.0107	-0.0071	0.0231	0.0147	-0.0071	0.0491
171	FINANCE/ACCOUNTING										
-1	Labor	Veh-Mi	0.0739	0.0509	0.0764	0.0798	0.0615	0.0459	0.0836	0.0459	0.0836
-2	Nonlabor	Veh-Mi	0.0288	0.0051	0.0033	-0.0011	-0.0075	0.0068	0.0034	-0.0075	0.0288
172	PURCHASING/STORES										
-1	Labor	Veh-Mi	0.0812	0.1266	0.0722	0.0637	0.0373	0.0959	0.1053	0.0373	0.1266
-2	Nonlabor	Veh-Mi	-0.0008	0.0440	0.0002	-0.0036	-0.0053	0.0114	-0.0020	-0.0053	0.0440
173	GENERAL ENGINEERING										
-1	Labor	Veh-Mi	0.0345	0.2122	0.0199	0.0268	0.1365	0.0312	0.1554	0.0199	0.2122
-2	Nonlabor	Veh-Mi	-0.0016	0.0061	0.0155	-0.0082	-0.0920	0.0006	-0.0674	-0.0920	0.0155
174	REAL ESTATE MANAGEMENT										
-1	Labor	Veh-Mi	0.0041			0.0055	0.0187	0.0027	0.0107	0.0027	0.0187
-2	Nonlabor	Veh-Mi	0.0001	0.0000		0.0001	-0.0184	0.0004	0.0044	-0.0184	0.0044
175	OFFICE MANAGEMENT & SERVICES										
-1	Labor	Veh-Mi	0.0592	0.0047		0.0052	0.0178	0.0244	0.0170	0.0047	0.0592
-2	Nonlabor	Veh-Mi	0.0313	0.0158	0.0159	0.0012	-0.0018	0.0267	0.0026	-0.0018	0.0313
176	GENERAL MANAGEMENT										
-1	Labor	Veh-Mi	0.0199	0.0107	0.0746	0.0310	0.0404	0.0121	0.0199	0.0107	0.0746
-2	Nonlabor	Veh-Mi	-0.0004	0.0095		0.0048	-0.0020	0.0157	0.0165	-0.0020	0.0165
162	CUSTOMER SERVICES										
-1	Labor	Plat-Hr	0.4523	0.1919	1.0665	1.2154	3.2625	0.2829	1.7299	0.1919	3.2625
-2	Nonlabor	Plat-Hr	0.1373	0.1563	0.1958	0.0405	0.0921	0.0069	5.1312	0.0069	5.1312
163	PROMOTION										
-1	Labor	Plat-Hr	0.2884		0.1577	0.8098	0.5409	0.1667	0.6928	0.1577	0.8098
-2	Nonlabor	Plat-Hr	0.0807	0.0013	2.1828	0.7369	0.5690	0.2318	1.9689	0.0013	2.1828
164	MARKET RESEARCH										
-1	Labor	Plat-Hr	0.1300		0.1577	0.3506	1.2763		0.1303	0.1300	1.2763
-2	Nonlabor	Plat-Hr	0.0398		0.0262	-0.0010	-0.3880		-0.0367	-0.3880	0.0398
Platform Hours			970,893	16,796,300	80,259	377,634	168,436	1,464,680	407,241		
Vehicle Miles			18,224,200	299,538,200	3,912,100	15,810,400	12,156,500	46,865,200	31,099,400		
Route Miles			76.6	481.2	30.5	80.4	51.5	191.0	142.0		
Passengers			143,746,900	1,591,525,900	10,367,400	88,357,300	65,548,000	145,347,600	63,959,400		
Stations			50	463	12	74	25	143	34		

O & M COST DATA BASE
 STRATUM 3
 1986 RAIL RAPID
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CTA 5066	BART 9003	MINIMUM	MAXIMUM
177	PLANNING										
-1	Labor	Plat-Hr	0.1921	0.3296	0.3560	0.3253	0.4597	0.3924	2.7165	0.1921	2.7165
-2	Nonlabor	Plat-Hr	0.1683	0.0070		-0.1082	-0.1399	0.0559	-1.3957	-1.3957	0.1683
181	GENERAL FUNCTION										
-1	Labor	Veh-Mi									
-2	Nonlabor	Veh-Mi	0.3253	0.1944	0.1908	0.3412	0.3352	-0.1718		-0.1718	0.3412

Platform Hours	970,893	16,796,300	80,259	377,634	168,436	1,464,680	407,241
Vehicle Miles	18,224,200	299,538,200	3,912,100	15,810,400	12,156,500	46,865,200	31,099,400
Route Miles	76.6	481.2	30.5	80.4	51.5	191.0	142.0
Passengers	143,746,900	1,591,525,900	10,367,400	88,357,300	65,548,000	145,347,600	63,959,400
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ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM	
011	VEHICLE OPERATIONS												
	TRANSPORTATION ADMIN												
-1	Labor	Plat-Hr	\$3.7760	\$0.6060	\$8.3129	\$7.5104	\$0.5584	\$2.9376	\$5.6859	\$13.0184	\$0.5584	\$13.0184	
-2	Nonlabor	Plat-Hr	-0.1480	0.0523	0.1103	0.2378	0.1086	-0.0139	0.0832	-0.0229	-0.1480	0.2378	
012	VEHICLE MOVEMENT CONTROL												
-1	Labor	Plat-Hr	11.5156	4.2518	3.9855	8.7375	11.3193	7.2765	0.8448	5.4914	0.8448	11.5156	
-2	Nonlabor	Plat-Hr	-0.5009	0.0027		-0.0134		-0.0765	0.0305	0.0183	-0.5009	0.0305	
021	SCHEDULING												
-1	Labor	Plat-Hr	0.4711	0.0338	1.1352	1.5414	0.6176	1.1001	1.0829	2.8496	0.0338	2.8496	
-2	Contract Service	Plat-Hr	0.0041						0.0022	0.2071	0.0000	0.2071	
-3	Other Nonlabor	Plat-Hr	-0.0207	0.0000		-0.0315	0.0010	0.0204	0.0204	0.0193	-0.0315	0.0204	
031	REVENUE VEHICLE OPERATIONS												
-1	Operators	Plat-Hr	24.3455	16.5902	21.7049	21.9271	24.2150	35.3628	23.7025	28.8545	16.5902	35.3628	
-2	Fuel & Lube	Veh-Mi	0.0021	0.0040		0.0004	0.0007	0.0141	0.0000		0.0000	0.0141	
-3	Tires & Tubes	Veh-Mi		0.0002		0.0004					0.0000	0.0004	
-4	Electricity	Veh-Mi	0.5245	0.3753	0.5851	0.5581	0.2464	0.9817	0.4780	0.4076	0.2464	0.9817	
-5	Other Labor	Plat-Hr	0.8203	0.1006		6.7637			10.6912	22.8881	0.0000	22.8881	
-6	Other Nonlabor	Plat-Hr	5.2682	3.2706		-0.0378	1.5805		0.0579	28.0261	-0.0378	28.0261	

Platform Hours	995,667	16,981,900	79,898	422,653	167,242	99,885	1,488,720	399,977
Vehicle Miles	19,370,300	305,817,817	3,965,114	16,229,219	12,549,790	2,197,890	47,464,843	30,884,962
Route Miles	76.5	481.2	30.5	80.4	54.7	38.2	191.0	142.0
Passengers	148,058,791	1,613,759,817	10,822,304	96,692,450	66,098,000	5,294,907	148,213,279	60,304,422
Stations	53	463	12	74	26	18	143	34

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ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE											
	MAINTENANCE ADMINISTRATION											
-1	Labor	Veh-Mi	0.3830	0.2369	0.0560	0.2484	0.1226	0.1903	0.0343	0.1248	0.0343	0.3830
-2	Nonlabor	Veh-Mi	-0.0159	0.0192	0.0001	-0.0221	0.0005	-0.0010	0.0063	-0.0349	-0.0349	0.0192
051	SERVICING REVENUE VEHICLES;											
061	INSPECTION & MAINTENANCE;											
062	ACCIDENT REPAIRS;											
071	VANDALISM REPAIRS											
-1	Labor	Veh-Mi	1.0988	0.6639	0.4727	0.6517	0.2748	0.8633	0.5401	0.6403	0.2748	1.0988
-2	Contract Service	Veh-Mi	0.0730	0.0113	0.0747	0.0032	0.0658	0.0454	0.0210	0.0369	0.0032	0.0747
-3	Parts	Veh-Mi	0.3719	0.2011	0.1541	0.3522	0.1080	0.3514	0.3406	0.1181	0.1080	0.3719
-4	Other Nonlabor	Veh-Mi	-0.0481	0.0001		-0.0683	-0.0009	-0.0053	0.0477	-0.0279	-0.0683	0.0477
081	SERVICING SERVICE VEHICLES;											
091	INSPECTION & MAINTENANCE											
-1	Labor	Veh-Mi	0.0570	0.0196	0.0193	0.0194	0.0071	0.0545	0.0294	0.0596	0.0071	0.0596
-2	Contract Service	Veh-Mi	0.0001	0.0009	0.0001	0.0029	0.0029	0.0000	0.0018	0.0056	0.0000	0.0056
-3	Fuel/Lube Service Vehicles	Veh-Mi	0.0052	0.0010	0.0065	0.0082	0.0032	0.0011	0.0000	0.0000	0.0000	0.0082
-4	Tires/Tubes Service Vehicles	Veh-Mi				0.0032		0.0013			0.0000	0.0032
-5	Parts	Veh-Mi	0.0183	0.0180	0.0174	0.0127	0.0165	0.0194	0.0114	0.0164	0.0114	0.0194
-6	Other Nonlabor	Veh-Mi	-0.0025	0.0000		-0.0004	0.0002	0.0001	0.0005	-0.0012	-0.0025	0.0005
	Platform Hours		995,667	16,981,900	79,898	422,653	167,242	99,885	1,488,720	399,977		
	Vehicle Miles		19,370,300	305,817,817	3,965,114	16,229,219	12,549,790	2,197,890	47,464,843	30,884,962		
	Route Miles		76.5	481.2	30.5	80.4	54.7	38.2	191.0	142.0		
	Passengers		148,058,791	1,613,759,817	10,822,304	96,692,450	66,098,000	5,294,907	148,213,279	60,304,422		
	Stations		53	463	12	74	26	18	143	34		

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042	NON-VEHICLE MAINTENANCE											
-1	MAINTENANCE ADMINISTRATION	Rte-Mi	86112	221540	12016	11466	6744	1689	1578	19011	1578	221540
-2	Labor	Rte-Mi	-3018	19326		-382	198	1464	24	-2353	-3018	19326
101	MOVEMENT CONTROL											
-1	Labor	Rte-Mi	71042	115813	948	28109	35865	19886	23716	41528	948	115813
-2	Contract Service	Rte-Mi	1134	1	33	0			1733	64	0	1733
-3	Parts	Rte-Mi	7151	8833	105	2599	2903	1519	3930	525	105	8833
-4	Other Nonlabor	Rte-Mi	-3060	0		-2329		-427	482	-1352	-3060	482
111	FARE COLLECTION/COUNTING											
-1	Labor	Stations	19283	9349	32619	11184	6334	2540	5172	92317	2540	92317
-2	Contract Service	Stations	194	0					55	2841	0	2841
-3	Parts	Stations	707	495	5539	1267	1181	188	558	13286	188	13286
-4	Other Nonlabor	Stations	-822	-0		-54			91	-1543	-1543	91
126	COMMUNICATION SYSTEMS											
-1	Labor	Rte-Mi	8634	10666	1954	3879	13768		571	13029	0	13768
-2	Contract Service	Rte-Mi	53		178	54		87	36	99	0	178
-3	Parts	Rte-Mi	299	941	1871	1335	3282		101	738	0	3282
-4	Other Nonlabor	Rte-Mi	-376	0		-54			39	-375	-375	39
121	ROADWAY/TRACK											
-1	Labor	Rte-Mi	124384	220890	11963	70465	49372	23502	27193	21438	11963	220890
-2	Contract Service	Rte-Mi	393	1204	2169	4255	288	655	371	814	288	4255
-3	Parts	Rte-Mi	17013	40737	2919	8120	3483	2743	2430	1392	1392	40737
-4	Other Nonlabor	Rte-Mi	-5373	22		-7931		-484	411	-738	-7931	411
122	STRUCTURES/TUNNEL/SUBWAY											
-1	Labor	Rte-Mi	25373	94824	2308	664			16332	13772	0	94824
-2	Contract Service	Rte-Mi	52	1914			4		8154	135	0	8154
-3	Parts	Rte-Mi	2929	9999	75	1010	627		2967	449	0	9999
-4	Other Nonlabor	Rte-Mi	-1087	0		0	8		520	-821	-1087	520
	Platform Hours		995,667	16,981,900	79,898	422,653	167,242	99,885	1,488,720	399,977		
	Vehicle Miles		19,370,300	305,817,817	3,965,114	16,229,219	12,549,790	2,197,890	47,464,843	30,884,962		
	Route Miles		76.5	481.2	30.5	80.4	54.7	38.2	191.0	142.0		
	Passengers		148,058,791	1,613,759,817	10,822,304	96,692,450	66,098,000	5,294,907	148,213,279	60,304,422		
	Stations		53	463	12	74	26	18	143	34		

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123	PASSENGER STATIONS;											
124	OPERATING STAT BLDG GROUNDS EQUIP;											
125	GARAGE/SHOP BLDG;											
127	GENERAL ADMIN BLDG GROUNDS EQUIP;											
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;											
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP											
-1	Labor	Rte-Mi	113687	229353	25792	73389	16809	13353	90995	72169	13353	229353
-2	Contract Service	Rte-Mi	71053	7012	5790	1285	35910	4540	6779	6509	1285	71053
-3	Parts	Rte-Mi	22119	21606	4983	12219	11048	2715	7718	9147	2715	22119
-4	Other Nonlabor	Rte-Mi	-4909	37		-1604	1	-4	5406	-114	-4909	5406
141	OPERATION/MAINT POWER FACILITIES											
-1	Labor	Stations	102477	128662	70463	66897	15357	42202	36754	51790	15357	128662
-2	Contract Service	Stations	769	11	2077	1295	1504	110	135	318	11	2077
-3	Parts	Stations	7709	7343	4828	10743	13445	2149	4148	1788	1788	13445
-4	Other Nonlabor	Stations	-110955	-136016		-1238		-906	34133	-4165	-136016	34133

Platform Hours	995,667	16,981,900	79,898	422,653	167,242	99,885	1,488,720	399,977
Vehicle Miles	19,370,300	305,817,817	3,965,114	16,229,219	12,549,790	2,197,890	47,464,843	30,884,962
Route Miles	76.5	481.2	30.5	80.4	54.7	38.2	191.0	142.0
Passengers	148,058,791	1,613,759,817	10,822,304	96,692,450	66,098,000	5,294,907	148,213,279	60,304,422
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ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
145	GENERAL ADMINISTRATION											
-1	PRELIMINARY TRANSIT SYSTEM DEVELOP	Veh-Mi	0.0077	0.0164		0.0958		0.0065		0.0240	0.0000	0.0958
-2	labor	Veh-Mi	0.0007	0.0043		-0.0420	0.0001	-0.0000		-0.0177	-0.0420	0.0043
151	TICKETING/FARE COLLECTION											
-1	Labor	Passengers	0.1092	0.0902	0.0702	0.1476	0.0077	0.0165	0.1864	0.0511	0.0077	0.1864
-2	Supplies	Passengers	0.0003	0.0016	0.0058	0.0009	0.0005	0.0036	0.0034	0.0051	0.0003	0.0058
-3	Other Nonlabor	Passengers	-0.0044	0.0014	0.0088	-0.0001	0.0003		0.0109	0.0040	-0.0044	0.0109
161	SYSTEM SECURITY											
-1	Labor	Stations	75348	471597	118233	21669	124165	10864	1692	237066	1692	471597
-2	Contract Service	Stations	6587	700	881	13243	39336	4160	3186	386	386	39336
-3	Other Nonlabor	Stations	-3155	3796	976	-67	304	87	71	673	-3155	3796
165	INJURIES/DAMAGES											
-1	Labor	Veh-Mi	0.0243	0.0142	0.0116	0.0513	0.0066	0.0587	0.0282	0.0039	0.0039	0.0587
-2	Claims	Veh-Mi	0.1317	0.0913	0.3513	1.1765	0.0077	0.0485	0.2220	0.0494	0.0077	1.1765
-3	Other Nonlabor	Veh-Mi	-0.0010	0.0002		0.0348	-0.0031	0.0351	0.0177	0.0012	-0.0031	0.0351
166	SAFETY											
-1	Labor	Veh-Mi	0.0204	0.0076	0.0149	0.0104	0.0047	0.0158	0.0097	0.0300	0.0047	0.0300
-2	Nonlabor	Veh-Mi	0.0002	0.0070	0.0007	0.0021		0.0354	0.0007	0.0012	0.0000	0.0354
167	PERSONNEL											
-1	Labor	Veh-Mi	0.0429	0.0791	0.0261	0.0749	0.0253	0.0076	0.0471	0.0663	0.0076	0.0791
-2	Nonlabor	Veh-Mi	0.0157	0.0456	0.0032	0.0012	-0.0028	-0.0002	0.0086	0.0285	-0.0028	0.0456
168	LEGAL											
-1	Labor	Veh-Mi	0.0163	0.0022		0.0458	0.0162	0.0941	0.0103	0.0322	0.0000	0.0941
-2	Nonlabor	Veh-Mi	0.0105	0.0089	0.0085	0.0344	0.0016	0.0023	0.0122	0.0045	0.0016	0.0344
169	INSURANCE											
-1	Labor	Veh-Mi	0.0021	0.0036	0.0066	0.1912	0.0089	0.0161	0.0059	0.0017	0.0000	0.0161
-2	Insurance	Veh-Mi	0.0646	0.0004	0.2015		0.1564	0.0167	0.0064	0.0410	0.0004	0.2015
-2	Other Nonlabor	Veh-Mi	-0.0001	0.0002	0.0063		0.0033	0.0016	0.0002	0.0037	-0.0001	0.0063
	Platform Hours		995,667	16,981,900	79,898	422,653	167,242	99,885	1,488,720	399,977		
	Vehicle Miles		19,370,300	305,817,817	3,965,114	16,229,219	12,549,790	2,197,890	47,464,843	30,884,962		
	Route Miles		76.5	481.2	30.5	80.4	54.7	38.2	191.0	142.0		
	Passengers		148,058,791	1,613,759,817	10,822,304	96,692,450	66,098,000	5,294,907	148,213,279	60,304,422		
	Stations		53	463	12	74	26	18	143	34		

O & M COST DATA BASE
 STRATUM 3
 1987 RAIL RAPID
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
170	DATA PROCESSING											
-1	Labor	Veh-Mi	0.0455	0.0549	0.0553	0.0589	0.0325	0.0332	0.0431	0.0623	0.0325	0.0623
-2	Nonlabor	Veh-Mi	0.0052	0.0594	0.0085	0.0346	-0.0079	0.0034	0.0179	0.0248	-0.0079	0.0594
171	FINANCE/ACCOUNTING											
-1	Labor	Veh-Mi	0.0713	0.0508	0.0781	0.0799	0.0665	0.0487	0.0471	0.0866	0.0471	0.0866
-2	Nonlabor	Veh-Mi	0.0282	0.0005	0.0034	-0.0023	-0.0165	0.0103	0.0036	0.0050	-0.0165	0.0282
172	PURCHASING/STORES											
-1	Labor	Veh-Mi	0.0896	0.1235	0.0774	0.0735	0.0608	0.0040	0.0878	0.1121	0.0040	0.1235
-2	Nonlabor	Veh-Mi	-0.0023	0.0756	0.0007	-0.0051	-0.0060	0.0002	0.0094	-0.0062	-0.0062	0.0756
173	GENERAL ENGINEERING											
-1	Labor	Veh-Mi	0.0343	0.2081	0.0194	0.0439	0.1570	0.0446	0.0351	0.1645	0.0194	0.2081
-2	Nonlabor	Veh-Mi	-0.0015	0.0059		-0.0060	-0.1090	0.0100	0.0012	-0.0804	-0.1090	0.0100
174	REAL ESTATE MANAGEMENT											
-1	Labor	Veh-Mi	0.0056			0.0054	0.0192	0.0912	0.0031	0.0172	0.0000	0.0912
-2	Nonlabor	Veh-Mi	-0.0000	0.0000		0.0000	-0.0182	0.0000	0.0003	-0.0013	-0.0182	0.0003
175	OFFICE MANAGEMENT & SERVICES											
-1	Labor	Veh-Mi	0.0157	0.0031		0.0057	0.0204	0.1472	0.0246	0.0179	0.0000	0.1472
-2	Nonlabor	Veh-Mi	0.1434	0.0089	0.0197	0.0008	-0.0016	0.0176	0.0301	0.0038	-0.0016	0.1434
176	GENERAL MANAGEMENT											
-1	Labor	Veh-Mi	0.0151	0.0121	0.0737	0.0347	0.0478	0.0438	0.0209	0.0209	0.0121	0.0737
-2	Nonlabor	Veh-Mi	-0.0005	0.0091		0.0118	-0.0033	-0.0077	0.0026	0.0162	-0.0077	0.0162
162	CUSTOMER SERVICES											
-1	Labor	Plat-Hr	0.4696	0.2179	1.1538	1.2860	2.8128	0.2109	0.2569	1.7572	0.2109	2.8128
-2	Nonlabor	Plat-Hr	0.1398	0.1350	0.1323	0.0328	0.0228	-0.0143	0.0055	6.2361	-0.0143	6.2361
163	PROMOTION											
-1	Labor	Plat-Hr	0.2939	0.0095	0.1637	0.7820	0.5130	0.5598	0.2089	0.7076	0.0095	0.7820
-2	Nonlabor	Plat-Hr	0.1525	0.0326	2.5836	0.4721	0.5462	0.7553	0.2267	2.3926	0.0326	2.5836
164	MARKET RESEARCH											
-1	Labor	Plat-Hr	0.1088		0.1637	0.3444	1.3081	1.1385		0.1534	0.0000	1.3081
-2	Nonlabor	Plat-Hr	0.0098			0.0046		0.3027		-0.0441	-0.0441	0.3027
	Platform Hours		995,667	16,981,900	79,898	422,653	167,242	99,885	1,488,720	399,977		
	Vehicle Miles		19,370,300	305,817,817	3,965,114	16,229,219	12,549,790	2,197,890	47,464,843	30,884,962		
	Route Miles		76.5	481.2	30.5	80.4	54.7	38.2	191.0	142.0		
	Passengers		148,058,791	1,613,759,817	10,822,304	96,692,450	66,098,000	5,294,907	148,213,279	60,304,422		
	Stations		53	463	12	74	26	18	143	34		

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 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
177	PLANNING											
-1	Labor	Plat-Hr	0.1738	0.2344	0.3578	0.3363	0.5814	0.2495	0.4053	2.7001	0.1738	2.7001
-2	Nonlabor	Plat-Hr	0.2121	0.0082		-0.1182	-0.5948	-0.0030	0.0478	-1.1593	-1.1593	0.2121
181	GENERAL FUNCTION											
-1	Labor	Veh-Mi							0.0013		0.0000	0.0013
-2	Nonlabor	Veh-Mi	0.3222	0.1028	0.1704	0.1437	0.3214	0.1939	-0.1470		-0.1470	0.3222
	Platform Hours		995,667	16,981,900	79,898	422,653	167,242	99,885	1,488,720	399,977		
	Vehicle Miles		19,370,300	305,817,817	3,965,114	16,229,219	12,549,790	2,197,890	47,464,843	30,884,962		
	Route Miles		76.5	481.2	30.5	80.4	54.7	38.2	191.0	142.0		
	Passengers		148,058,791	1,613,759,817	10,822,304	96,692,450	66,098,000	5,294,907	148,213,279	60,304,422		
	Stations		53	463	12	74	26	18	143	34		

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ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
011	VEHICLE OPERATIONS											
-1	TRANSPORTATION ADMIN											
	Labor	Plat-Hr	\$4.6045	\$0.6928	\$8.0797	\$8.2547	\$0.4020	\$2.6501	\$5.8760	\$35.9419	\$0.4020	\$35.9419
-2	Nonlabor	Plat-Hr	-0.2546	0.0565	0.1602	0.2727	0.1014	-0.0045	0.1220	-0.0097	-0.2546	0.2727
012	VEHICLE MOVEMENT CONTROL											
-1	Labor	Plat-Hr	11.8385	4.9650	4.7807	8.7938	11.5537	9.9583	0.8758	6.1521	0.8758	11.8385
-2	Nonlabor	Plat-Hr	-0.7154	0.0163		-0.1285		-0.0255	0.0203	-0.0111	-0.7154	0.0203
021	SCHEDULING											
-1	Labor	Plat-Hr	0.5170	0.0366	0.9658	1.4044	0.3655	0.9243	1.1228	2.6550	0.0366	2.6550
-2	Contract Service	Plat-Hr	0.0070						0.0070	0.1286	0.0070	0.1286
-3	Other Nonlabor	Plat-Hr	-0.0315	0.0001		-0.0370			0.0110	0.0109	-0.0370	0.0110
031	REVENUE VEHICLE OPERATIONS											
-1	Operators	Plat-Hr	25.0629	18.8695	23.2203	22.7171	24.4228	35.2348	24.3950	30.5323	18.8695	35.2348
-2	Fuel & Lube	Veh-Mi	0.0020	0.0006		0.0004	0.0001	0.0167	0.0000		0.0000	0.0167
-3	Tires & Tubes	Veh-Mi		0.0001							0.0001	0.0001
-4	Electricity	Veh-Mi	0.5063	0.3557	0.5895	0.4549	0.2313	1.0237	0.3788	0.3286	0.2313	1.0237
-5	Other Labor	Plat-Hr		0.1071		6.8358			11.0102	0.1679	0.1071	11.0102
-6	Other Nonlabor	Plat-Hr	6.0576	3.4004		-0.0742	0.0229		0.3271	27.7075	-0.0742	27.7075
	Platform Hours		1,021,502	16,777,800	81,092	424,451	192,836	124,313	1,527,262	402,944		
	Vehicle Miles		20,990,300	316,138,900	4,088,100	16,515,600	13,493,900	2,184,300	55,824,400	32,571,100		
	Route Miles		76.7	488.0	30.5	76.8	67.0	38.2	191.0	142.0		
	Passengers		151,468,600	1,483,209,500	11,102,500	98,477,900	65,908,000	4,614,500	174,436,000	61,160,000		
	Stations		53	466	12	74	29	18	143	34		

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ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE											
	MAINTENANCE ADMINISTRATION											
-1	Labor	Veh-Mi	0.3699	0.2372	0.0433	0.2283	0.0578	0.2168	0.0273	0.1153	0.0273	0.3699
-2	Nonlabor	Veh-Mi	-0.0220	0.0178	0.0000	-0.0203	-0.0009	0.0056	0.0034	-0.0355	-0.0355	0.0178
051	SERVICING REVENUE VEHICLES;											
061	INSPECTION & MAINTENANCE;											
062	ACCIDENT REPAIRS;											
071	VANDALISM REPAIRS											
-1	Labor	Veh-Mi	1.3853	0.6966	0.4794	0.6760	0.2497	0.9494	0.4912	0.6664	0.2497	1.3853
-2	Contract Service	Veh-Mi	0.1189	0.0205	0.0490	0.0032	0.1623	0.0809	0.0085	0.0454	0.0032	0.1623
-3	Parts	Veh-Mi	0.2512	0.2553	0.1638	0.0409	0.0399	0.2063	0.2677	0.1219	0.0399	0.2677
-4	Other Nonlabor	Veh-Mi	-0.0838	0.0001		-0.0670		-0.0023	0.0425	-0.0416	-0.0838	0.0425
081	SERVICING SERVICE VEHICLES;											
091	INSPECTION & MAINTENANCE											
-1	Labor	Veh-Mi	0.0139	0.0326	0.0197	0.0162	0.0021	0.0606	0.0239	0.0579	0.0021	0.0606
-2	Contract Service	Veh-Mi		0.0029	0.0003		0.0006	0.0003	0.0011	0.0053	0.0003	0.0053
-3	Fuel/Lube Service Vehicles	Veh-Mi	0.0055	0.0018	0.0068	0.0065		0.0014	0.0000		0.0000	0.0068
-4	Tires/Tubes Service Vehicles	Veh-Mi				0.0028		0.0002			0.0002	0.0028
-5	Parts	Veh-Mi	0.0034	0.0160	0.0162	0.0120	0.0163	0.0115	0.0090	0.0148	0.0034	0.0163
-6	Other Nonlabor	Veh-Mi	-0.0008	0.0000		-0.0003	0.0006	0.0002	0.0004	-0.0011	-0.0011	0.0006
	Platform Hours		1,021,502	16,777,800	81,092	424,451	192,836	124,313	1,527,262	402,944		
	Vehicle Miles		20,990,300	316,138,900	4,088,100	16,515,600	13,493,900	2,184,300	55,824,400	32,571,100		
	Route Miles		76.7	488.0	30.5	76.8	67.0	38.2	191.0	142.0		
	Passengers		151,468,600	1,483,209,500	11,102,500	98,477,900	65,908,000	4,614,500	174,436,000	61,160,000		
	Stations		53	466	12	74	29	18	143	34		

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042	NON-VEHICLE MAINTENANCE											
	MAINTENANCE ADMINISTRATION											
-1	Labor	Rte-Mi	13613	252827	12174	12118	5857	1968	1517	18943	1517	252827
-2	Nonlabor	Rte-Mi	3245	19395	2	-383	-40	1830	48	-4287	-4287	19395
101	MOVEMENT CONTROL											
-1	Labor	Rte-Mi	77443	118507	1151	29343	25000	22374	24222	43302	1151	118507
-2	Contract Service	Rte-Mi	667	6	12	2		8124	8124	610	2	8124
-3	Parts	Rte-Mi	7902	10277	142	1001	1671	1265	4052	677	142	10277
-4	Other Nonlabor	Rte-Mi	-4612	7		-963		-186	526	-878	-4612	526
111	FARE COLLECTION/COUNTING											
-1	Labor	Stations	19805	10039	32167	11284	19856	3104	5630	95884	3104	95884
-2	Contract Service	Stations	1852	2		31		431	431	3389	2	3389
-3	Parts	Stations	905	1096	4969	961	2463	298	887	11576	298	11576
-4	Other Nonlabor	Stations	-1171	0		-7		128	128	-2238	-2238	128
126	COMMUNICATION SYSTEMS											
-1	Labor	Rte-Mi	9007	11331	1991	4467	13595		510	14270	510	14270
-2	Contract Service	Rte-Mi	345	3	181	4		125		39	3	345
-3	Parts	Rte-Mi	378	3278	2031	1343	2205		62	854	62	3278
-4	Other Nonlabor	Rte-Mi	-543	34		-153			21	-356	-543	34
121	ROADWAY/TRACK											
-1	Labor	Rte-Mi	109424	220254	15398	69032	14786	26066	33720	21771	14786	220254
-2	Contract Service	Rte-Mi	742	495	1432	4351	2250	1478	252	675	252	4351
-3	Parts	Rte-Mi	14718	52326	3380	11481	2799	2199	3179	1539	1539	52326
-4	Other Nonlabor	Rte-Mi	-6843	22		-6028		-211	584	-393	-6843	584
122	STRUCTURES/TUNNEL/SUBWAY											
-1	Labor	Rte-Mi	22389	98800	3356	1185	1677		17058	14888	1185	98800
-2	Contract Service	Rte-Mi	13	390	11		2455		8597	153	11	8597
-3	Parts	Rte-Mi	2225	15940	278	2239			4700	534	278	15940
-4	Other Nonlabor	Rte-Mi	-1326	0		1			489	-482	-1326	489
	Platform Hours		1,021,502	16,777,800	81,092	424,451	192,836	124,313	1,527,262	402,944		
	Vehicle Miles		20,990,300	316,138,900	4,088,100	16,515,600	13,493,900	2,184,300	55,824,400	32,571,100		
	Route Miles		76.7	488.0	30.5	76.8	67.0	38.2	191.0	142.0		
	Passengers		151,468,600	1,483,209,500	11,102,500	98,477,900	65,908,000	4,614,500	174,436,000	61,160,000		
	Stations		53	466	12	74	29	18	143	34		

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123	PASSENGER STATIONS;											
124	OPERATING STAT BLDG GROUNDS EQUIP;											
125	GARAGE/SHOP BLDG;											
127	GENERAL ADMIN BLDG GROUNDS EQUIP;											
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;											
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP											
-1	Labor	Rte-Mi	121400	262604	29707	74913	41946	9800	112543	75222	9800	262604
-2	Contract Service	Rte-Mi	134371	11032	9021	1962	33466	5350	9725	8287	1962	134371
-3	Parts	Rte-Mi	21395	30304	5173	16534	9365	1372	12828	8479	1372	30304
-4	Other Nonlabor	Rte-Mi	-7267	13		-53	0	-2	8342	-914	-7267	8342
141	OPERATION/MAINT POWER FACILITIES											
-1	Labor	Stations	109288	128337	77489	81307	35483	47483	41627	52800	35483	128337
-2	Contract Service	Stations	6845	685	197	1526	766	297	73	433	73	6845
-3	Parts	Stations	10491	13486	4086	9215	9546	1790	5670	2318	1790	13486
-4	Other Nonlabor	Stations	-126624	-142508		-2415		-394	35392	-3889	-142508	35392
	Platform Hours		1,021,502	16,777,800	81,092	424,451	192,836	124,313	1,527,262	402,944		
	Vehicle Miles		20,990,300	316,138,900	4,088,100	16,515,600	13,493,900	2,184,300	55,824,400	32,571,100		
	Route Miles		76.7	488.0	30.5	76.8	67.0	38.2	191.0	142.0		
	Passengers		151,468,600	1,483,209,500	11,102,500	98,477,900	65,908,000	4,614,500	174,436,000	61,160,000		
	Stations		53	466	12	74	29	18	143	34		

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GENERAL ADMINISTRATION												
145	PRELIMINARY TRANSIT SYSTEM DEVELOP											
-1	labor	Veh-Mi	0.0073	0.0202		0.1061		0.0067		0.0244	0.0067	0.1061
-2	Nonlabor	Veh-Mi	0.0023	0.0070		-0.0477	0.0001	0.0037		-0.0180	-0.0477	0.0070
TICKETING/FARE COLLECTION												
151	Labor	Passengers	0.1178	0.1056	0.0720	0.1472	0.0038	0.0225	0.1673	0.0518	0.0038	0.1673
-2	Supplies	Passengers	0.0002	0.0016	0.0046	0.0011	0.0008	0.0066	0.0034	0.0054	0.0002	0.0066
-3	Other Nonlabor	Passengers	-0.0065	0.0036	0.0087	-0.0002	0.0009	0.0000	0.0106	0.0034	-0.0065	0.0106
SYSTEM SECURITY												
161	Labor	Stations	92217	527345	142501	20935	194794	16038	2282	256806	2282	527345
-2	Contract Service	Stations	8839	1782	1840	13648	9774	6283	6678	782	782	13648
-3	Other Nonlabor	Stations	-4509	4020	246	75	1110	152	129	802	-4509	4020
INJURIES/DAMAGES												
165	Labor	Veh-Mi	0.0270	0.0148	0.0119	0.0503	0.0063	0.0919	0.0281	0.0038	0.0038	0.0919
-2	Claims	Veh-Mi	0.1533	0.1225	0.1084	1.1211	0.0836	0.0113	0.1498	0.0819	0.0113	1.1211
-3	Other Nonlabor	Veh-Mi	0.0053	0.0003		0.0301	-0.0003	0.0312	0.0123	0.0011	-0.0003	0.0312
SAFETY												
166	Labor	Veh-Mi	0.0119	0.0077	0.0153	0.0119	0.0062	0.0052	0.0095	0.0279	0.0052	0.0279
-2	Nonlabor	Veh-Mi	0.0073	0.0141	0.0001	0.0005		0.0498	0.0009	0.0006	0.0001	0.0498
PERSONNEL												
167	Labor	Veh-Mi	0.0058	0.0876	0.0281	0.0783	0.0280	0.0079	0.0491	0.0676	0.0058	0.0876
-2	Nonlabor	Veh-Mi	0.0004	0.0482	0.0033	0.0133	-0.0015	0.0020	0.0070	0.0251	-0.0015	0.0482
LEGAL												
168	Labor	Veh-Mi	0.0188	0.0022		0.0491	0.0166	0.1046	0.0121	0.0315	0.0022	0.1046
-2	Nonlabor	Veh-Mi	-0.0011	0.0107	0.0116	0.0252	0.0061	0.0078	0.0241	0.0048	-0.0011	0.0252
INSURANCE												
169	Labor	Veh-Mi	0.0256	0.0042	0.0068	0.1414	0.0112	0.0172	0.0055	0.0016	0.0016	0.0256
-2	Insurance	Veh-Mi	0.0661	0.0005	0.2209	0.1414	0.1245	0.0127	0.0049	0.0349	0.0005	0.2209
-2	Other Nonlabor	Veh-Mi	-0.0001	0.0002	0.0073		0.0027	0.0024	0.0001	0.0029	-0.0001	0.0073
Platform Hours			1,021,502	16,777,800	81,092	424,451	192,836	124,313	1,527,262	402,944		
Vehicle Miles			20,990,300	316,138,900	4,088,100	16,515,600	13,493,900	2,184,300	55,824,400	32,571,100		
Route Miles			76.7	488.0	30.5	76.8	67.0	38.2	191.0	142.0		
Passengers			151,468,600	1,483,209,500	11,102,500	98,477,900	65,908,000	4,614,500	174,436,000	61,160,000		
Stations			53	466	12	74	29	18	143	34		

O & M COST DATA BASE
 STRATUM 3
 1988 RAIL RAPID
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
170	DATA PROCESSING											
-1	Labor	Veh-Mi	0.0442	0.0487	0.0638	0.0582	0.0445	0.0416	0.0433	0.0613	0.0416	0.0638
-2	Nonlabor	Veh-Mi	0.0130	0.0559	0.0087	0.0166	-0.0047	0.0109	0.0236	0.0199	-0.0047	0.0559
171	FINANCE/ACCOUNTING											
-1	Labor	Veh-Mi	0.0138	0.0518	0.0837	0.0726	0.0678	0.0486	0.0443	0.0952	0.0138	0.0952
-2	Nonlabor	Veh-Mi	0.0044	0.0028	0.0042	-0.0012	-0.0212	0.0305	0.0034	0.0003	-0.0212	0.0305
172	PURCHASING/STORES											
-1	Labor	Veh-Mi	0.0018	0.1293	0.0650	0.0687	0.0558	0.0040	0.0792	0.1134	0.0018	0.1293
-2	Nonlabor	Veh-Mi	-0.0001	0.0436	0.0009	-0.0054	-0.0053	0.0006	0.0058	-0.0043	-0.0054	0.0436
173	GENERAL ENGINEERING											
-1	Labor	Veh-Mi	0.0524	0.2303	0.0230	0.0408	0.1876	0.0492	0.0375	0.1620	0.0230	0.2303
-2	Nonlabor	Veh-Mi	0.0041	0.0053	0.0172	-0.0072	-0.1158	0.0153	0.0018	-0.0777	-0.1158	0.0172
174	REAL ESTATE MANAGEMENT											
-1	Labor	Veh-Mi	0.0703	0.0001		0.0045	0.0167	0.0837	0.0025	0.0179	0.0025	0.0837
-2	Nonlabor	Veh-Mi	0.0258	0.0000		0.0000	-0.0150	0.0133	0.0012	-0.0078	-0.0150	0.0258
175	OFFICE MANAGEMENT & SERVICES											
-1	Labor	Veh-Mi	0.0916	0.0036		0.0065	0.0243	0.1003	0.0238	0.0173	0.0036	0.1003
-2	Nonlabor	Veh-Mi	-0.0020	0.0111	0.0318	0.0008	-0.0010	0.0306	0.0275	0.0028	-0.0020	0.0318
176	GENERAL MANAGEMENT											
-1	Labor	Veh-Mi	0.0334	0.0109	0.0752	0.0283	0.0512	0.0523	0.0335	0.0184	0.0109	0.0752
-2	Nonlabor	Veh-Mi	-0.0020	0.0091		0.0090	-0.0018	-0.0036	0.0089	0.0081	-0.0036	0.0091
162	CUSTOMER SERVICES											
-1	Labor	Plat-Hr	0.0993	0.2839	1.2072	1.2687	2.5960	0.1866	0.2825	1.9953	0.0993	2.5960
-2	Nonlabor	Plat-Hr	0.0040	0.0249	0.1643	0.0248	-0.0059	0.0192	0.0132	6.3605	-0.0059	6.3605
163	PROMOTION											
-1	Labor	Plat-Hr	0.6133		0.2163	0.6964	0.7016	0.4481	0.2108	0.7752	0.2108	0.7752
-2	Nonlabor	Plat-Hr	0.0099	0.0111	2.3743	0.4660	2.0703	0.6093	0.4357	3.5460	0.0099	3.5460
164	MARKET RESEARCH											
-1	Labor	Plat-Hr	0.7154		0.2163	0.2565	1.4407	0.9626		0.4494	0.2163	1.4407
-2	Nonlabor	Plat-Hr	0.0343	0.0000		-0.0011	-0.7083	0.4601		0.1972	-0.7083	0.4601
	Platform Hours		1,021,502	16,777,800	81,092	424,451	192,836	124,313	1,527,262	402,944		
	Vehicle Miles		20,990,300	316,138,900	4,088,100	16,515,600	13,493,900	2,184,300	55,824,400	32,571,100		
	Route Miles		76.7	488.0	30.5	76.8	67.0	38.2	191.0	142.0		
	Passengers		151,468,600	1,483,209,500	11,102,500	98,477,900	65,908,000	4,614,500	174,436,000	61,160,000		
	Stations		53	466	12	74	29	18	143	34		

O & M COST DATA BASE
STRATUM 3

1988 RAIL RAPID
LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	MBTA 1003	NYCTA 2008	PATCO 2075	SEPTA 3019	MARTA 4022	CLEVELAND 5015	CTA 5066	BART 9003	MINIMUM	MAXIMUM
177	PLANNING											
-1	Labor	Plat-Hr	0.2165	0.1984	0.3679	0.2612	0.3637	0.2065	0.4376	3.7505	0.1984	3.7505
-2	Nonlabor	Plat-Hr	0.2030	0.0067		-0.1042		0.0423	0.1628	-2.0982	-2.0982	0.2030
181	GENERAL FUNCTION											
-1	Labor	Veh-Mi		0.0980	0.1745	0.1161	0.3193	0.2324	0.0000	0.0000	0.0000	0.0000
-2	Nonlabor	Veh-Mi							-0.1303	-0.1303	-0.1303	0.3193

Platform Hours	1,021,502	16,777,800	81,092	424,451	192,836	124,313	1,527,262	402,944
Vehicle Miles	20,990,300	316,138,900	4,088,100	16,515,600	13,493,900	2,184,300	55,824,400	32,571,100
Route Miles	76.7	488.0	30.5	76.8	67.0	38.2	191.0	142.0
Passengers	151,468,600	1,483,209,500	11,102,500	98,477,900	65,908,000	4,614,500	174,436,000	61,160,000
Stations	53	466	12	74	29	18	143	34

Stratum 3
Light Rail

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
011	VEHICLE OPERATIONS							
-1	TRANSPORTATION ADMIN							
	Labor	Plat-Hr	\$1.9885	\$2.8452		\$2.7712	\$1.9885	\$2.8452
-2	Nonlabor	Plat-Hr	0.0475	-0.1181		0.3150	-0.1181	0.3150
012	VEHICLE MOVEMENT CONTROL							
-1	Labor	Plat-Hr	1.1948	10.7338	1.4011	12.2155	1.1948	12.2155
-2	Nonlabor	Plat-Hr	0.0011	-0.5066	-0.0011	0.2861	-0.5066	0.2861
021	SCHEDULING							
-1	Labor	Plat-Hr	1.0531	0.1382	0.2150	0.8901	0.1382	1.0531
-2	Contract Service	Plat-Hr	0.0145	0.0004			0.0004	0.0145
-3	Other Nonlabor	Plat-Hr	0.0000	-0.0065	-0.0074	-0.0289	-0.0289	0.0000
031	REVENUE VEHICLE OPERATIONS							
-1	Operators	Plat-Hr	22.6234	26.7978	22.3984	36.4969	22.3984	36.4969
-2	Fuel & Lube	Veh-Mi		0.0046	0.2733	0.0017	0.0017	0.2733
-3	Tires & Tubes	Veh-Mi			0.0000		0.0000	0.0000
-4	Electricity	Veh-Mi	0.1233	1.2400	0.3928	0.7146	0.1233	1.2400
-5	Other Labor	Plat-Hr		0.2713	0.1433		0.1433	0.2713
-6	Other Nonlabor	Plat-Hr		11.3873	-0.0398	13.0965	-0.0398	13.0965

Platform Hours	2,782	112,901	665,899	93,352
Vehicle Miles	34,000	1,079,400	5,604,200	1,343,300
Route Miles	3.2	55.9	165.7	29.8
Passengers	232,200	16,235,100	41,887,100	6,040,700
Stations	7	85	9	6

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE							
-1	MAINTENANCE ADMINISTRATION							
	Labor	Veh-Mi	0.2979	1.0205	0.5854	0.1393	0.1393	1.0205
-2	Nonlabor	Veh-Mi	0.0030	-0.0448	-0.1414	-0.0448	-0.1414	0.0030
051	SERVICING REVENUE VEHICLES;							
061	INSPECTION & MAINTENANCE;							
062	ACCIDENT REPAIRS;							
071	VANDALISM REPAIRS							
-1	Labor	Veh-Mi	3.0917	3.1248	1.1044	2.4947	1.1044	3.1248
-2	Contract Service	Veh-Mi	0.0179	0.2394	0.0001		0.0001	0.2394
-3	Parts	Veh-Mi	0.2685	0.8003	0.5720	0.3936	0.2685	0.8003
-4	Other Nonlabor	Veh-Mi		-0.1475	-0.2071	0.4496	-0.2071	0.4496
081	SERVICING SERVICE VEHICLES;							
091	INSPECTION & MAINTENANCE							
-1	Labor	Veh-Mi	0.0126	0.1115	0.0141	0.0295	0.0126	0.1115
-2	Contract Service	Veh-Mi	0.0014	0.0494			0.0014	0.0494
-3	Fuel/Lube Service Vehicles	Veh-Mi	0.0078	0.0146	0.0005	0.0676	0.0005	0.0676
-4	Tires/Tubes Service Vehicles	Veh-Mi	0.0010		0.0015	0.0011	0.0010	0.0015
-5	Parts	Veh-Mi	0.0033		0.0195	0.0102	0.0033	0.0195
-6	Other Nonlabor	Veh-Mi	0.0023	-0.0053	-0.0000	-0.0004	-0.0053	0.0023

Platform Hours	2,782	112,901	665,899	93,352
Vehicle Miles	34,000	1,079,400	5,604,200	1,343,300
Route Miles	3.2	55.9	165.7	29.8
Passengers	232,200	16,235,100	41,887,100	6,040,700
Stations	7	85	9	6

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
042	NON-VEHICLE MAINTENANCE							
	MAINTENANCE ADMINISTRATION							
-1	Labor	Rte-Mi	610	13373	941	160	160	13373
-2	Nonlabor	Rte-Mi	7	-622	-14	-13	-622	7
101	MOVEMENT CONTROL							
-1	Labor	Rte-Mi		3244	242	726	242	3244
-2	Contract Service	Rte-Mi	55	583			55	583
-3	Parts	Rte-Mi			150	119	119	150
-4	Other Nonlabor	Rte-Mi		-153	-1	-1	-153	-1
111	FARE COLLECTION/COUNTING							
-1	Labor	Stations	193	158	16485	499	158	16485
-2	Contract Service	Stations	1	-2			-2	1
-3	Parts	Stations	117	4	2001		4	2001
-4	Other Nonlabor	Stations		-7	-0	-3	-7	-0
126	COMMUNICATION SYSTEMS							
-1	Labor	Rte-Mi	0	879			0	879
-2	Contract Service	Rte-Mi	0	250			0	250
-3	Parts	Rte-Mi		7		16	7	16
-4	Other Nonlabor	Rte-Mi	0	-41		35	-41	35
121	ROADWAY/TRACK							
-1	Labor	Rte-Mi	676	22161	10311	106207	676	106207
-2	Contract Service	Rte-Mi	7818	2410	940	239	239	7818
-3	Parts	Rte-Mi	37		3273	32789	37	32789
-4	Other Nonlabor	Rte-Mi	0	-1046	-934	-42280	-42280	0
122	STRUCTURES/TUNNEL/SUBWAY							
-1	Labor	Rte-Mi	34	510	41	19578	34	19578
-2	Contract Service	Rte-Mi		0		78	0	78
-3	Parts	Rte-Mi	1	147	29	227	1	227
-4	Other Nonlabor	Rte-Mi	0	-24	-0	-5843	-5843	0
	Platform Hours		2,782	112,901	665,899	93,352		
	Vehicle Miles		34,000	1,079,400	5,604,200	1,343,300		
	Route Miles		3.2	55.9	165.7	29.8		
	Passengers		232,200	16,235,100	41,887,100	6,040,700		
	Stations		7	85	9	6		

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE							
-1	MAINTENANCE ADMINISTRATION							
-2	Labor	Veh-Mi	0.2979	1.0205	0.5854	0.1393	0.1393	1.0205
	Nonlabor	Veh-Mi	0.0030	-0.0448	-0.1414	-0.0448	-0.1414	0.0030
051	SERVICING REVENUE VEHICLES;							
061	INSPECTION & MAINTENANCE;							
062	ACCIDENT REPAIRS;							
071	VANDALISM REPAIRS							
-1	Labor	Veh-Mi	3.0917	3.1248	1.1044	2.4947	1.1044	3.1248
-2	Contract Service	Veh-Mi	0.0179	0.2394	0.0001		0.0001	0.2394
-3	Parts	Veh-Mi	0.2685	0.8003	0.5720	0.3936	0.2685	0.8003
-4	Other Nonlabor	Veh-Mi		-0.1475	-0.2071	0.4496	-0.2071	0.4496
081	SERVICING SERVICE VEHICLES;							
091	INSPECTION & MAINTENANCE							
-1	Labor	Veh-Mi	0.0126	0.1115	0.0141	0.0295	0.0126	0.1115
-2	Contract Service	Veh-Mi	0.0014	0.0494			0.0014	0.0494
-3	Fuel/Lube Service Vehicles	Veh-Mi	0.0078	0.0146	0.0005	0.0676	0.0005	0.0676
-4	Tires/Tubes Service Vehicles	Veh-Mi	0.0010		0.0015	0.0011	0.0010	0.0015
-5	Parts	Veh-Mi	0.0033		0.0195	0.0102	0.0033	0.0195
-6	Other Nonlabor	Veh-Mi	0.0023	-0.0053	-0.0000	-0.0004	-0.0053	0.0023
	Platform Hours		2,782	112,901	665,899	93,352		
	Vehicle Miles		34,000	1,079,400	5,604,200	1,343,300		
	Route Miles		3.2	55.9	165.7	29.8		
	Passengers		232,200	16,235,100	41,887,100	6,040,700		
	Stations		7	85	9	6		

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
042	NON-VEHICLE MAINTENANCE							
	MAINTENANCE ADMINISTRATION							
-1	Labor	Rte-Mi	610	13373	941	160	160	13373
-2	Nonlabor	Rte-Mi	7	-622	-14	-13	-622	7
101	MOVEMENT CONTROL							
-1	Labor	Rte-Mi		3244	242	726	242	3244
-2	Contract Service	Rte-Mi	55	583			55	583
-3	Parts	Rte-Mi			150	119	119	150
-4	Other Nonlabor	Rte-Mi		-153	-1	-1	-153	-1
111	FARE COLLECTION/COUNTING							
-1	Labor	Stations	193	158	16485	499	158	16485
-2	Contract Service	Stations	1	-2			-2	1
-3	Parts	Stations	117	4	2001		4	2001
-4	Other Nonlabor	Stations		-7	-0	-3	-7	-0
126	COMMUNICATION SYSTEMS							
-1	Labor	Rte-Mi	0	879			0	879
-2	Contract Service	Rte-Mi	0	250			0	250
-3	Parts	Rte-Mi		7		16	7	16
-4	Other Nonlabor	Rte-Mi	0	-41		35	-41	35
121	ROADWAY/TRACK							
-1	Labor	Rte-Mi	676	22161	10311	106207	676	106207
-2	Contract Service	Rte-Mi	7818	2410	940	239	239	7818
-3	Parts	Rte-Mi	37		3273	32789	37	32789
-4	Other Nonlabor	Rte-Mi	0	-1046	-934	-42280	-42280	0
122	STRUCTURES/TUNNEL/SUBWAY							
-1	Labor	Rte-Mi	34	510	41	19578	34	19578
-2	Contract Service	Rte-Mi		0		78	0	78
-3	Parts	Rte-Mi	1	147	29	227	1	227
-4	Other Nonlabor	Rte-Mi	0	-24	-0	-5843	-5843	0
	Platform Hours		2,782	112,901	665,899	93,352		
	Vehicle Miles		34,000	1,079,400	5,604,200	1,343,300		
	Route Miles		3.2	55.9	165.7	29.8		
	Passengers		232,200	16,235,100	41,887,100	6,040,700		
	Stations		7	85	9	6		

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
123	PASSENGER STATIONS;							
124	OPERATING STAT BLDG GROUNDS EQUIP;							
125	GARAGE/SHOP BLDG;							
127	GENERAL ADMIN BLDG GROUNDS EQUIP;							
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;							
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP							
-1	Labor	Rte-Mi	10417	19880	7190	23939	7190	23939
-2	Contract Service	Rte-Mi	457	2849	549	1215	457	2849
-3	Parts	Rte-Mi	1509	3772	3242	1831	1509	3772
-4	Other Nonlabor	Rte-Mi	1	-938	-187	-1020	-1020	1
141	OPERATION/MAINT POWER FACILITIES							
-1	Labor	Stations	629	14742	134056	297380	629	297380
-2	Contract Service	Stations		1629	1131		1131	1629
-3	Parts	Stations	142		42584	7641	142	42584
-4	Other Nonlabor	Stations		-16371	-3052	-15094	-16371	-3052

Platform Hours	2,782	112,901	665,899	93,352
Vehicle Miles	34,000	1,079,400	5,604,200	1,343,300
Route Miles	3.2	55.9	165.7	29.8
Passengers	232,200	16,235,100	41,887,100	6,040,700
Stations	7	85	9	6

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
145	GENERAL ADMINISTRATION							
-1	PRELIMINARY TRANSIT SYSTEM DEVELOP	Veh-Mi					0.0152	0.0467
-2	labor	Veh-Mi					-0.0225	0.0008
-2	Nonlabor							
151	TICKETING/FARE COLLECTION							
-1	Labor	Passengers	0.0030	0.0063	0.0073	0.0131	0.0030	0.0131
-2	Supplies	Passengers	0.0006	0.0001	0.0004	0.0017	0.0001	0.0017
-3	Other Nonlabor	Passengers		0.0001	-0.0001	0.0004	-0.0001	0.0004
161	SYSTEM SECURITY							
-1	Labor	Stations	0	4544	33491	7600	0	33491
-2	Contract Service	Stations	99	280	14335	33294	99	33294
-3	Other Nonlabor	Stations	0	-206	76	-432	-432	76
165	INJURIES/DAMAGES							
-1	Labor	Veh-Mi		0.1088	0.0275	0.0405	0.0275	0.1088
-2	Claims	Veh-Mi	0.0535	1.9834	0.5586	0.0542	0.0535	1.9834
-3	Other Nonlabor	Veh-Mi	0.0051	-0.0051	0.0153	0.0292	-0.0051	0.0292
166	SAFETY							
-1	Labor	Veh-Mi	0.0274	0.0386	0.0055	0.0079	0.0055	0.0386
-2	Nonlabor	Veh-Mi	0.0008	-0.0003	0.0013	0.0018	-0.0003	0.0018
167	PERSONNEL							
-1	Labor	Veh-Mi	0.0403	0.0982	0.0428	0.0448	0.0403	0.0982
-2	Nonlabor	Veh-Mi	0.0021	0.0316	-0.0030	0.0225	-0.0030	0.0316
168	LEGAL							
-1	Labor	Veh-Mi	0.0018	0.0738	0.0227	0.0070	0.0018	0.0738
-2	Nonlabor	Veh-Mi	0.0180	0.0030	0.0154	0.0005	0.0005	0.0180
169	INSURANCE							
-1	Labor	Veh-Mi	0.0048	0.0043	-0.0000	0.0017	-0.0000	0.0048
-2	Insurance	Veh-Mi	0.0333	0.2162	0.0648	0.0367	0.0333	0.2162
-2	Other Nonlabor	Veh-Mi	0.0022	-0.0002		-0.0001	-0.0002	0.0022

Platform Hours	2,782	112,901	665,899	93,352
Vehicle Miles	34,000	1,079,400	5,604,200	1,343,300
Route Miles	3.2	55.9	165.7	29.8
Passengers	232,200	16,235,100	41,887,100	6,040,700
Stations	7	85	9	6

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
170	DATA PROCESSING							
-1	Labor	Veh-Mi	0.0224	0.0840	0.0332	0.0266	0.0224	0.0840
-2	Nonlabor	Veh-Mi	0.0144	-0.0006	0.0063	0.0021	-0.0006	0.0144
171	FINANCE/ACCOUNTING							
-1	Labor	Veh-Mi	0.3569	0.1568	0.0470	0.0518	0.0470	0.3569
-2	Nonlabor	Veh-Mi	0.0099	0.0065	-0.0007	0.0082	-0.0007	0.0099
172	PURCHASING/STORES							
-1	Labor	Veh-Mi	0.0058	0.1798	0.0376	0.0371	0.0058	0.1798
-2	Nonlabor	Veh-Mi	0.0001	-0.0004	-0.0021	-0.0016	-0.0021	0.0001
173	GENERAL ENGINEERING							
-1	Labor	Veh-Mi	0.0056	0.0762	0.0131	0.0450	0.0056	0.0762
-2	Nonlabor	Veh-Mi	0.0001	-0.0036	-0.0031	-0.0008	-0.0036	0.0001
174	REAL ESTATE MANAGEMENT							
-1	Labor	Veh-Mi		0.0091	0.0033	0.0063	0.0033	0.0091
-2	Nonlabor	Veh-Mi		0.0002	0.0001		0.0001	0.0002
175	OFFICE MANAGEMENT & SERVICES							
-1	Labor	Veh-Mi	0.0135	0.1925	0.0031	0.0106	0.0031	0.1925
-2	Nonlabor	Veh-Mi	0.0039	0.0444	0.0007	0.0034	0.0007	0.0444
176	GENERAL MANAGEMENT							
-1	Labor	Veh-Mi	0.0678	0.0435	0.0183	0.0740	0.0183	0.0740
-2	Nonlabor	Veh-Mi	0.0097	-0.0009	0.0028	-0.0206	-0.0206	0.0097
162	CUSTOMER SERVICES							
-1	Labor	Plat-Hr	1.1872	0.3594	0.1441	0.6107	0.1441	1.1872
-2	Nonlabor	Plat-Hr	0.1640	0.1567	0.0048	-0.0409	-0.0409	0.1640
163	PROMOTION							
-1	Labor	Plat-Hr	0.0500	0.3186	0.0959	0.1439	0.0500	0.3186
-2	Nonlabor	Plat-Hr	0.4058	0.0958	0.0873	0.0353	0.0353	0.4058
164	MARKET RESEARCH							
-1	Labor	Plat-Hr	0.0703	0.1448	0.0415	0.0415	0.0415	0.1448
-2	Nonlabor	Plat-Hr	0.0164	0.0418	-0.0001	-0.0001	-0.0001	0.0418

Platform Hours	2,782	112,901	665,899	93,352
Vehicle Miles	34,000	1,079,400	5,604,200	1,343,300
Route Miles	3.2	55.9	165.7	29.8
Passengers	232,200	16,235,100	41,887,100	6,040,700
Stations	7	85	9	6

O & M COST DATA BASE
 STRATUM 3
 1986 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Seattle 0001	MBTA 1003	SEPTA 3019	Pat 3022	MINIMUM	MAXIMUM
177	PLANNING							
-1	Labor	Plat-Hr	0.0980	0.2183	0.0385	0.2042	0.0385	0.2183
-2	Nonlabor	Plat-Hr	0.0001	0.2097	-0.0128	-0.0323	-0.0323	0.2097
181	GENERAL FUNCTION							
-1	Labor	Veh-Mi						
-2	Nonlabor	Veh-Mi	0.3964	0.7510	0.2226	0.4593	0.2226	0.7510

Platform Hours	2,782	112,901	665,899	93,352
Vehicle Miles	34,000	1,079,400	5,604,200	1,343,300
Route Miles	3.2	55.9	165.7	29.8
Passengers	232,200	16,235,100	41,887,100	6,040,700
Stations	7	85	9	6

O & M COST DATA BASE
 STRATUM 3
 1987 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
011	VEHICLE OPERATIONS								
-1	TRANSPORTATION ADMIN	Plat-Hr	\$2.8157	\$3.1475	\$1.1567	\$3.5438	\$2.1074	\$1.1567	\$3.5438
-2	Labor	Plat-Hr	0.2031	-0.1256	0.0310	0.1870	-0.0101	-0.1256	0.2031
012	VEHICLE MOVEMENT CONTROL								
-1	Labor	Plat-Hr	5.6295	10.7798	1.4647	12.1354	5.3098	1.4647	12.1354
-2	Nonlabor	Plat-Hr		-0.4660	-0.0002	-0.0278	-0.0559	-0.4660	-0.0002
021	SCHEDULING								
-1	Labor	Plat-Hr	1.3028	0.1444	0.2018	0.3351	0.8047	0.1444	1.3028
-2	Contract Service	Plat-Hr		0.0005				0.0005	0.0005
-3	Other Nonlabor	Plat-Hr	-0.0082	-0.0062	-0.0041	0.1605		-0.0082	0.1605
031	REVENUE VEHICLE OPERATIONS								
-1	Operators	Plat-Hr	18.2381	26.9076	21.9266	29.3910	24.8959	18.2381	29.3910
-2	Fuel & Lube	Veh-Mi		0.0037	0.0005		0.0162	0.0005	0.0162
-3	Tires & Tubes	Veh-Mi			0.0004			0.0004	0.0004
-4	Electricity	Veh-Mi	0.4712	1.1805	0.6899	0.7482	0.9076	0.4712	1.1805
-5	Other Labor	Plat-Hr	0.0263	0.2500	0.1286	0.0398		0.0263	0.2500
-6	Other Nonlabor	Plat-Hr	0.6017	11.4578	-0.0037	12.2314		-0.0037	12.2314

Platform Hours	54,844	108,985	615,603	106,058	78,309
Vehicle Miles	1,105,592	1,075,923	5,054,289	1,435,983	1,098,348
Route Miles	25.2	49.8	165.7	34.1	26.0
Passengers	4,961,772	18,159,445	34,738,055	5,397,548	3,903,924
Stations	24	85	9	12	29

O & M COST DATA BASE
 STRATUM 3
 1987 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE								
-1	MAINTENANCE ADMINISTRATION								
-2	Labor	Veh-Mi	0.3871	0.9518	0.6587	0.4368	0.2179	0.2179	0.9518
	Nonlabor	Veh-Mi	0.0407	-0.0372	-0.1003	-0.0555	-0.0012	-0.1003	0.0407
051	SERVICING REVENUE VEHICLES;								
061	INSPECTION & MAINTENANCE;								
062	ACCIDENT REPAIRS;								
071	VANDALISM REPAIRS								
-1	Labor	Veh-Mi	0.8240	2.9849	1.3835	2.4232	0.9838	0.8240	2.9849
-2	Contract Service	Veh-Mi	0.0371	0.2647	0.0008	0.0696	0.0520	0.0008	0.2647
-3	Parts	Veh-Mi	0.1040	0.6840	0.7400	0.1118	0.4025	0.1040	0.7400
-4	Other Nonlabor	Veh-Mi	0.0036	-0.1290	-0.1606	0.4165	-0.0060	-0.1606	0.4165
081	SERVICING SERVICE VEHICLES;								
091	INSPECTION & MAINTENANCE								
-1	Labor	Veh-Mi		0.1034	0.0111	0.0463	0.0624	0.0111	0.1034
-2	Contract Service	Veh-Mi		-0.0000		0.0001	0.0000	-0.0000	0.0001
-3	Fuel/Lube Service Vehicles	Veh-Mi		0.0112	0.0202	0.0560	0.0013	0.0013	0.0560
-4	Tires/Tubes Service Vehicles	Veh-Mi			0.0020	0.0023	0.0014	0.0014	0.0023
-5	Parts	Veh-Mi	0.0072	0.0468	0.0095	0.0143	0.0223	0.0072	0.0468
-6	Other Nonlabor	Veh-Mi		-0.0045	-0.0000	-0.0020	0.0001	-0.0045	0.0001

Platform Hours	54,844	108,985	615,603	106,058	78,309
Vehicle Miles	1,105,592	1,075,923	5,054,289	1,435,983	1,098,348
Route Miles	25.2	49.8	165.7	34.1	26.0
Passengers	4,961,772	18,159,445	34,738,055	5,397,548	3,903,924
Stations	24	85	9	12	29

O & M COST DATA BASE
 STRATUM 3
 1987 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
042	NON-VEHICLE MAINTENANCE								
-1	Maintenance Administration	Rte-Mi		15830	1307	213	1423	213	15830
-2	Labor	Rte-Mi		-582	-22	-15	1234	-582	1234
101	MOVEMENT CONTROL								
-1	Labor	Rte-Mi		3775	161	1312	16721	161	16721
-2	Contract Service	Rte-Mi		55	0	2		0	55
-3	Parts	Rte-Mi		656	264	85	1277	85	1277
-4	Other Nonlabor	Rte-Mi		-163	-1	-8	-359	-359	-1
111	FARE COLLECTION/COUNTING								
-1	Labor	Stations		181	17563	340	904	181	17563
-2	Contract Service	Stations		4				4	4
-3	Parts	Stations		20	1985	8	67	8	1985
-4	Other Nonlabor	Stations		-8	-85	-2		-85	-2
126	COMMUNICATION SYSTEMS								
-1	Labor	Rte-Mi		1153	372			372	1153
-2	Contract Service	Rte-Mi		13	25	2	73	2	73
-3	Parts	Rte-Mi		10	108	51		10	108
-4	Other Nonlabor	Rte-Mi		-50	-5	3		-50	3
121	ROADWAY/TRACK								
-1	Labor	Rte-Mi	1310	25663	10365	97563	19764	1310	97563
-2	Contract Service	Rte-Mi		36	890	660	551	36	890
-3	Parts	Rte-Mi		2703	2673	28169	2307	2307	28169
-4	Other Nonlabor	Rte-Mi		-1109	-809	-31455	-407	-31455	-407
122	STRUCTURES/TUNNEL/SUBWAY								
-1	Labor	Rte-Mi		578	71	19352		71	19352
-2	Contract Service	Rte-Mi		12		4		4	12
-3	Parts	Rte-Mi		151	23	72		23	151
-4	Other Nonlabor	Rte-Mi		-25	0	-5373		-5373	0

Platform Hours	54,844	108,985	615,603	106,058	78,309
Vehicle Miles	1,105,592	1,075,923	5,054,289	1,435,983	1,098,348
Route Miles	25.2	49.8	165.7	34.1	26.0
Passengers	4,961,772	18,159,445	34,738,055	5,397,548	3,903,924
Stations	24	85	9	12	29

O & M COST DATA BASE
 STRATUM 3
 1987 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
123	PASSENGER STATIONS;								
124	OPERATING STAT BLDG GROUNDS EQUIP;								
125	GARAGE/SHOP BLDG;								
127	GENERAL ADMIN BLDG GROUNDS EQUIP;								
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;								
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP								
-1	Labor	Rte-Mi	3333	21458	6468	22187	11252	3333	22187
-2	Contract Service	Rte-Mi	390	3668	90	2690	3827	90	3827
-3	Parts	Rte-Mi	7	3227	2130	2341	2288	7	3227
-4	Other Nonlabor	Rte-Mi	-0	-928	-148	-1291	-3	-1291	-0
141	OPERATION/MAINT POWER FACILITIES								
-1	Labor	Stations	1375	14915	234233	173420	14992	1375	234233
-2	Contract Service	Stations		55	4211	0	39	0	4211
-3	Parts	Stations		1132	43778	3257	763	763	43778
-4	Other Nonlabor	Stations	-1375	-16103	-3733	-8186	-322	-16103	-322

Platform Hours	54,844	108,985	615,603	106,058	78,309
Vehicle Miles	1,105,592	1,075,923	5,054,289	1,435,983	1,098,348
Route Miles	25.2	49.8	165.7	34.1	26.0
Passengers	4,961,772	18,159,445	34,738,055	5,397,548	3,903,924
Stations	24	85	9	12	29

O & M COST DATA BASE
 STRATUM 3
 1987 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
042	NON-VEHICLE MAINTENANCE								
	MAINTENANCE ADMINISTRATION								
-1	Labor	Rte-Mi		15830	1307	213	1423	213	15830
-2	Nonlabor	Rte-Mi		-582	-22	-15	1234	-582	1234
101	MOVEMENT CONTROL								
-1	Labor	Rte-Mi		3775	161	1312	16721	161	16721
-2	Contract Service	Rte-Mi		55	0	2		0	55
-3	Parts	Rte-Mi		656	264	85	1277	85	1277
-4	Other Nonlabor	Rte-Mi		-163	-1	-8	-359	-359	-1
111	FARE COLLECTION/COUNTING								
-1	Labor	Stations		181	17563	340	904	181	17563
-2	Contract Service	Stations		4				4	4
-3	Parts	Stations		20	1985	8	67	8	1985
-4	Other Nonlabor	Stations		-8	-85	-2		-85	-2
126	COMMUNICATION SYSTEMS								
-1	Labor	Rte-Mi		1153	372			372	1153
-2	Contract Service	Rte-Mi		13	25	2	73	2	73
-3	Parts	Rte-Mi		10	108	51		10	108
-4	Other Nonlabor	Rte-Mi		-50	-5	3		-50	3
121	ROADWAY/TRACK								
-1	Labor	Rte-Mi	1310	25663	10365	97563	19764	1310	97563
-2	Contract Service	Rte-Mi		36	890	660	551	36	890
-3	Parts	Rte-Mi		2703	2673	28169	2307	2307	28169
-4	Other Nonlabor	Rte-Mi		-1109	-809	-31455	-407	-31455	-407
122	STRUCTURES/TUNNEL/SUBWAY								
-1	Labor	Rte-Mi		578	71	19352		71	19352
-2	Contract Service	Rte-Mi		12		4		4	12
-3	Parts	Rte-Mi		151	23	72		23	151
-4	Other Nonlabor	Rte-Mi		-25	0	-5373		-5373	0
	Platform Hours		54,844	108,985	615,603	106,058	78,309		
	Vehicle Miles		1,105,592	1,075,923	5,054,289	1,435,983	1,098,348		
	Route Miles		25.2	49.8	165.7	34.1	26.0		
	Passengers		4,961,772	18,159,445	34,738,055	5,397,548	3,903,924		
	Stations		24	85	9	12	29		

O & M COST DATA BASE
 STRATUM 3
 1987 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
123	PASSENGER STATIONS;								
124	OPERATING STAT BLDG GROUNDS EQUIP;								
125	GARAGE/SHOP BLDG;								
127	GENERAL ADMIN BLDG GROUNDS EQUIP;								
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;								
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP								
-1	Labor	Rte-Mi	3333	21458	6468	22187	11252	3333	22187
-2	Contract Service	Rte-Mi	390	3668	90	2690	3827	90	3827
-3	Parts	Rte-Mi	7	3227	2130	2341	2288	7	3227
-4	Other Nonlabor	Rte-Mi	-0	-928	-148	-1291	-3	-1291	-0
141	OPERATION/MAINT POWER FACILITIES								
-1	Labor	Stations	1375	14915	234233	173420	14992	1375	234233
-2	Contract Service	Stations		55	4211	0	39	0	4211
-3	Parts	Stations		1132	43778	3257	763	763	43778
-4	Other Nonlabor	Stations	-1375	-16103	-3733	-8186	-322	-16103	-322

Platform Hours	54,844	108,985	615,603	106,058	78,309
Vehicle Miles	1,105,592	1,075,923	5,054,289	1,435,983	1,098,348
Route Miles	25.2	49.8	165.7	34.1	26.0
Passengers	4,961,772	18,159,445	34,738,055	5,397,548	3,903,924
Stations	24	85	9	12	29

O & M COST DATA BASE
STRATUM 3

1987 LIGHT RAIL
LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
145	GENERAL ADMINISTRATION								
-1	PRELIMINARY TRANSIT SYSTEM DEVELOP labor	Veh-Mi	0.0831	0.0165	0.0586		0.0075	0.0075	0.0831
-2	Nonlabor	Veh-Mi	-0.0072	0.0016	-0.0257		-0.0000	-0.0257	0.0016
151	TICKETING/FARE COLLECTION								
-1	Labor	Passengers	0.0197	0.0075	0.0088	0.0181	0.0138	0.0075	0.0197
-2	Supplies	Passengers	0.0048	0.0003	0.0004	0.0029	0.0028	0.0003	0.0048
-3	Other Nonlabor	Passengers	-0.0001	-0.0002	-0.0001	0.0000		-0.0002	0.0000
161	SYSTEM SECURITY								
-1	Labor	Stations	132	3770	34000	5067	3867	132	34000
-2	Contract Service	Stations	7201	293	20779	11674	1481	293	20779
-3	Other Nonlabor	Stations	-0	-158	-171	2	31	-171	31
165	INJURIES/DAMAGES								
-1	Labor	Veh-Mi	-0.0018	0.0952	0.0314	0.0540	0.0755	-0.0018	0.0952
-2	Claims	Veh-Mi	0.0932	1.4358	0.7201	0.0764	0.0680	0.0680	1.4358
-3	Other Nonlabor	Veh-Mi		-0.0041	0.0213	0.0314	0.0403	-0.0041	0.0403
166	SAFETY								
-1	Labor	Veh-Mi		0.0413	0.0064	0.0135	0.0182	0.0064	0.0413
-2	Nonlabor	Veh-Mi		-0.0006	0.0013	0.0030	0.0406	-0.0006	0.0406
167	PERSONNEL								
-1	Labor	Veh-Mi	0.0358	0.0920	0.0459	0.0620	0.0087	0.0087	0.0920
-2	Nonlabor	Veh-Mi	0.0095	0.0307	0.0008	0.0254	-0.0002	-0.0002	0.0307
168	LEGAL								
-1	Labor	Veh-Mi	0.0500	0.0639	0.0281	0.0096	0.1080	0.0096	0.1080
-2	Nonlabor	Veh-Mi	0.0368	0.0186	0.0211	0.0057	0.0026	0.0026	0.0368
169	INSURANCE								
-1	Labor	Veh-Mi	0.0238	0.0043		0.0024	0.0185	0.0024	0.0238
-2	Insurance	Veh-Mi	0.0391	0.1503	0.1171	0.0654	0.0191	0.0191	0.1503
-2	Other Nonlabor	Veh-Mi	-0.0105	-0.0002		-0.0002	0.0018	-0.0105	0.0018
	Platform Hours		54,844	108,985	615,603	106,058	78,309		
	Vehicle Miles		1,105,592	1,075,923	5,054,289	1,435,983	1,098,348		
	Route Miles		25.2	49.8	165.7	34.1	26.0		
	Passengers		4,961,772	18,159,445	34,738,055	5,397,548	3,903,924		
	Stations		24	85	9	12	29		

O & M COST DATA BASE
 STRATUM 3
 1987 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
170	DATA PROCESSING								
-1	Labor	Veh-Mi	0.0814	0.0954	0.0360	0.0374	0.0381	0.0360	0.0954
-2	Nonlabor	Veh-Mi	0.0308	0.0093	0.0212	0.0057	0.0039	0.0039	0.0308
171	FINANCE/ACCOUNTING								
-1	Labor	Veh-Mi	0.0972	0.1488	0.0489	0.0913	0.0559	0.0489	0.1488
-2	Nonlabor	Veh-Mi	0.0303	0.0174	-0.0014	0.0048	0.0119	-0.0014	0.0303
172	PURCHASING/STORES								
-1	Labor	Veh-Mi	0.0956	0.1861	0.0449	0.0576	0.0046	0.0046	0.1861
-2	Nonlabor	Veh-Mi	-0.0015	-0.0031	-0.0031	-0.0014	0.0003	-0.0031	0.0003
173	GENERAL ENGINEERING								
-1	Labor	Veh-Mi	0.0193	0.0729	0.0223	0.0534	0.0512	0.0193	0.0729
-2	Nonlabor	Veh-Mi	0.0033	-0.0032	-0.0028	-0.0045	0.0115	-0.0045	0.0115
174	REAL ESTATE MANAGEMENT								
-1	Labor	Veh-Mi		0.0119	0.0033	0.0078	0.1047	0.0033	0.1047
-2	Nonlabor	Veh-Mi		-0.0002	0.0000	-0.0002	0.0001	-0.0002	0.0001
175	OFFICE MANAGEMENT & SERVICES								
-1	Labor	Veh-Mi	0.0082	0.0488	0.0035	0.0175	0.1690	0.0035	0.1690
-2	Nonlabor	Veh-Mi	0.0198	0.2568	0.0005	0.0045	0.0202	0.0005	0.2568
176	GENERAL MANAGEMENT								
-1	Labor	Veh-Mi	0.0474	0.0335	0.0213	0.0741	0.0502	0.0213	0.0741
-2	Nonlabor	Veh-Mi	0.0087	-0.0012	0.0078	-0.0028	-0.0088	-0.0088	0.0087
162	CUSTOMER SERVICES								
-1	Labor	Plat-Hr	0.7244	0.3766	0.1685	0.7788	0.1543	0.1543	0.7788
-2	Nonlabor	Plat-Hr	0.6613	0.1461	0.0043	0.0817	-0.0105	-0.0105	0.6613
163	PROMOTION								
-1	Labor	Plat-Hr	1.1854	0.3212	0.1024	0.1832	0.4095	0.1024	1.1854
-2	Nonlabor	Plat-Hr	0.7839	0.1510	0.0615	0.0270	0.5523	0.0270	0.7839
164	MARKET RESEARCH								
-1	Labor	Plat-Hr	1.3032	0.1227	0.0451		0.8329	0.0451	1.3032
-2	Nonlabor	Plat-Hr	0.3743	0.0119	0.0006		0.2214	0.0006	0.3743

Platform Hours	54,844	108,985	615,603	106,058	78,309
Vehicle Miles	1,105,592	1,075,923	5,054,289	1,435,983	1,098,348
Route Miles	25.2	49.8	165.7	34.1	26.0
Passengers	4,961,772	18,159,445	34,738,055	5,397,548	3,903,924
Stations	24	85	9	12	29

O & M COST DATA BASE
 STRATUM 3
 1987 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	PORTLAND 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	MINIMUM	MAXIMUM
177	PLANNING								
-1	Labor	Plat-Hr	0.7782	0.1880	0.0440	0.2577	0.1825	0.0440	0.7782
-2	Nonlabor	Plat-Hr	0.6440	0.2211	-0.0155	-0.0079	-0.0022	-0.0155	0.6440
181	GENERAL FUNCTION								
-1	Labor	Veh-Mi							
-2	Nonlabor	Veh-Mi	0.4143	0.7389	0.0880	0.5903	0.2225	0.0880	0.7389

Platform Hours	54,844	108,985	615,603	106,058	78,309
Vehicle Miles	1,105,592	1,075,923	5,054,289	1,435,983	1,098,348
Route Miles	25.2	49.8	165.7	34.1	26.0
Passengers	4,961,772	18,159,445	34,738,055	5,397,548	3,903,924
Stations	24	85	9	12	29

O & M COST DATA BASE
 STRATUM 3
 1988 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	TRI-MET 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	SCCTD 9013	MINIMUM	MAXIMUM
VEHICLE OPERATIONS										
TRANSPORTATION ADMIN										
011	Labor	Plat-Hr	\$3.3950	\$4.1371	\$1.3646	\$2.5629	\$1.9626	\$22.3733	\$1.3646	\$22.3733
-1	Nonlabor	Plat-Hr	0.1296	-0.2347	0.0369	0.2076	-0.0034	4.7175	-0.2347	4.7175
012	VEHICLE MOVEMENT CONTROL									
-1	Labor	Plat-Hr	10.2788	10.6869	1.4469	6.6864	7.3792	4.8934	1.4469	10.6869
-2	Nonlabor	Plat-Hr		-0.6504	-0.0040	-0.0047	-0.0192	0.0250	-0.6504	0.0250
021	SCHEDULING									
-1	Labor	Plat-Hr	2.8896	0.1724	0.1767	0.9000	0.6785	1.5822	0.1724	2.8896
-2	Contract Service	Plat-Hr	0.0311	0.0021					0.0021	0.0311
-3	Other Nonlabor	Plat-Hr	-0.0162	-0.0105	-0.0047	-0.0012			-0.0162	-0.0012
031	REVENUE VEHICLE OPERATIONS									
-1	Operators	Plat-Hr	31.9209	28.2381	22.7149	23.4514	25.5471	45.1228	22.7149	45.1228
-2	Fuel & Lube	Veh-Mi	0.0119	0.0034			0.0187		0.0034	0.0187
-3	Tires & Tubes	Veh-Mi								
-4	Electricity	Veh-Mi	0.3689	1.1343	0.7126	0.7191	0.9574	1.1796	0.3689	1.1796
-5	Other Labor	Plat-Hr	0.2849		0.1429			6.5709	0.1429	6.5709
-6	Other Nonlabor	Plat-Hr		14.3889	-0.0211	0.0002			-0.0211	14.3889
Platform Hours			45,174	101,592	613,642	192,022	94,366	15,700		
Vehicle Miles			1,420,400	1,125,500	5,427,600	2,252,100	1,084,000	233,900		
Route Miles			30.2	55.9	147.6	41.1	26.0	17.4		
Passengers			5,585,500	19,894,500	42,759,000	8,184,500	3,928,500	195,500		
Stations			24	85	9	13	29	20		

O & M COST DATA BASE

STRATUM 3

1988 LIGHT RAIL

LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	TRI-MET 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	SCCTD 9013	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE									
-1	MAINTENANCE ADMINISTRATION	Veh-Mi	0.4030	0.8890	0.6053	0.3940	0.2455	1.2677	0.2455	1.2677
-2	Labor	Veh-Mi	0.0263	-0.0523	-0.0867	-0.0044	0.0063	0.1331	-0.0867	0.1331
051	NONLABOR									
061	SERVICING REVENUE VEHICLES;									
062	INSPECTION & MAINTENANCE;									
071	ACCIDENT REPAIRS;									
-1	VANDALISM REPAIRS	Veh-Mi	0.5778	3.4723	1.3210	1.6765	1.0757	2.6822	0.5778	3.4723
-2	Labor	Veh-Mi	0.0071	0.3881	0.0004	0.0859	0.0917	0.0457	0.0004	0.3881
-3	Contract Service	Veh-Mi	0.1763	0.4669	0.5063	0.0859	0.2339	0.0055	0.0055	0.5063
-4	Parts	Veh-Mi	-0.0028	-0.2113	-0.0771	-0.0180	-0.0027		-0.2113	-0.0027
081	Other Nonlabor									
091	SERVICING SERVICE VEHICLES;									
-1	INSPECTION & MAINTENANCE	Veh-Mi	0.0033	0.0368	0.0060	0.0463	0.0687		0.0033	0.0687
-2	Labor	Veh-Mi								
-3	Contract Service	Veh-Mi	0.0024	0.0112	0.0036	0.0074	0.0003	0.0053	0.0001	0.0053
-4	Fuel/Lube Service Vehicles	Veh-Mi	0.0024	0.0112	0.0036	0.0074	0.0016	0.0010	0.0010	0.0112
-5	Tires/Tubes Service Vehicles	Veh-Mi	0.0160	0.0076	0.0016	0.0016	0.0002		0.0002	0.0016
-6	Parts	Veh-Mi	0.0160	0.0076	0.0092	0.0134	0.0130		0.0076	0.0160
-6	Other Nonlabor	Veh-Mi	-0.0022	-0.0022	-0.0001	-0.0016	0.0002		-0.0022	0.0002

Platform Hours	45,174	101,592	613,642	192,022	94,366	15,700
Vehicle Miles	1,420,400	1,125,500	5,427,600	2,252,100	1,084,000	233,900
Route Miles	30.2	55.9	147.6	41.1	26.0	17.4
Passengers	5,585,500	19,894,500	42,759,000	8,184,500	3,928,500	195,500
Stations	24	85	9	13	29	20

O & M COST DATA BASE
 STRATUM 3
 1988 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	TRI-MET 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	SCCTD 9013	MINIMUM	MAXIMUM
NON-VEHICLE MAINTENANCE										
MAINTENANCE ADMINISTRATION										
042	Labor	Rte-Mi		2102	1288	38	1614	8823	38	8823
-1	Labor	Rte-Mi		479	-24	1	1498	72	-24	1498
-2	Nonlabor									
MOVEMENT CONTROL										
101	Labor	Rte-Mi		3927	236	2354	18491		236	18491
-1	Labor	Rte-Mi		20	0				0	20
-2	Contract Service	Rte-Mi		774	250	502	1046	53	53	1046
-3	Parts	Rte-Mi		-239	-3	-181	-156		-239	-3
-4	Other Nonlabor	Rte-Mi								
FARE COLLECTION/COUNTING										
111	Labor	Stations	7455	183	16858	67	1074		67	16858
-1	Labor	Stations		1	46			16	1	46
-2	Contract Service	Stations	35	1	1436	387	103	104	1	1436
-3	Parts	Stations		1						
-4	Other Nonlabor	Stations	0	-11	-11	-2		0	-11	0
COMMUNICATION SYSTEMS										
126	Labor	Rte-Mi		1326	440			8471	440	8471
-1	Labor	Rte-Mi		56	0	26	102		0	111
-2	Contract Service	Rte-Mi		18	127	251		170	18	251
-3	Parts	Rte-Mi		-81	-15	-16			-81	-15
-4	Other Nonlabor	Rte-Mi								
ROADWAY/TRACK										
121	Labor	Rte-Mi	11781	23607	12568	78985	21537	16657	11781	78985
-1	Labor	Rte-Mi		4723	392	612	1218	187	3	4723
-2	Contract Service	Rte-Mi	3	1421	2377	30151	1816	74	74	30151
-3	Parts	Rte-Mi	613	-1418	-700	-27846	-177		-27846	-1
-4	Other Nonlabor	Rte-Mi	-1							
STRUCTURES/TUNNEL/SUBWAY										
122	Labor	Rte-Mi		400	112	16167			112	16167
-1	Labor	Rte-Mi				1			1	1
-2	Contract Service	Rte-Mi		122	190	119			119	190
-3	Parts	Rte-Mi		-24	0	-4864			-4864	0
-4	Other Nonlabor	Rte-Mi								

Platform Hours	45,174	101,592	613,642	192,022	94,366	15,700
Vehicle Miles	1,420,400	1,125,500	5,427,600	2,252,100	1,084,000	233,900
Route Miles	30.2	55.9	147.6	41.1	26.0	17.4
Passengers	5,585,500	19,894,500	42,759,000	8,184,500	3,928,500	195,500
Stations	24	85	9	13	29	20

O & M COST DATA BASE

STRATUM 3

1988 LIGHT RAIL

LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	TRI-MET 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	SCCTD 9013	MINIMUM	MAXIMUM
123	PASSENGER STATIONS;									
124	OPERATING STAT BLDG GROUNDS EQUIP;									
125	GARAGE/SHOP BLDG;									
127	GENERAL ADMIN BLDG GROUNDS EQUIP;									
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;									
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP									
-1	Labor	Rte-Mi	3624	18698	7047	21691	8023	12922	3624	21691
-2	Contract Service	Rte-Mi	2201	3223	168	2836	4381	1466	168	4381
-3	Parts	Rte-Mi	2566	3156	2476	2851	1123	4221	1123	4221
-4	Other Nonlabor	Rte-Mi	0	-1132	-5	-1436	-2	44	-1436	44
141	OPERATION/MAINT POWER FACILITIES									
-1	Labor	Stations	4087	16941	162086	146589	16578	8841	4087	162086
-2	Contract Service	Stations		508	2731	116	104	15	15	2731
-3	Parts	Stations		1109	23468	5797	625	829	625	23468
-4	Other Nonlabor	Stations		-18557	-3642	-4508	-140	3	-18557	3

Platform Hours	45,174	101,592	613,642	192,022	94,366	15,700
Vehicle Miles	1,420,400	1,125,500	5,427,600	2,252,100	1,084,000	233,900
Route Miles	30.2	55.9	147.6	41.1	26.0	17.4
Passengers	5,585,500	19,894,500	42,759,000	8,184,500	3,928,500	195,500
Stations	24	85	9	13	29	20

O & M COST DATA BASE
 STRATUM 3
 1988 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	TRI-MET 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	SCCTD 9013	MINIMUM	MAXIMUM
145	GENERAL ADMINISTRATION									
-1	PRELIMINARY TRANSIT SYSTEM DEVELOP	Veh-Mi	0.0614	0.0162	0.0587		0.0075		0.0075	0.0614
-2	labor	Veh-Mi	0.0119	0.0050	-0.0264		0.0042		-0.0264	0.0119
151	TICKETING/FARE COLLECTION									
-1	Labor	Passengers	0.0193	0.0073	0.0079	0.0170	0.0147		0.0073	0.0193
-2	Supplies	Passengers	0.0059	0.0001	0.0005	0.0031	0.0043	0.0055	0.0001	0.0059
-3	Other Nonlabor	Passengers	0.0003	-0.0001	-0.0001	0.0001	0.0000	0.0007	-0.0001	0.0007
161	SYSTEM SECURITY									
-1	Labor	Stations	1608	3282	31302	6934	5547	9857	1608	31302
-2	Contract Service	Stations	256	370	20407	13703	2173	5034	256	20407
-3	Other Nonlabor	Stations	0	-167	113	-38	53	29	-167	113
165	INJURIES/DAMAGES									
-1	Labor	Veh-Mi	0.0003	0.0424	0.0279	0.0537	0.1031		0.0003	0.1031
-2	Claims	Veh-Mi	0.0535	0.8907	0.6203	0.0616	0.0224		0.0224	0.8907
-3	Other Nonlabor	Veh-Mi		0.0103	0.0167	0.0521	0.0350		0.0103	0.0521
166	SAFETY									
-1	Labor	Veh-Mi	0.0110	0.0248	0.0066	0.0190	0.0059	0.1876	0.0059	0.1876
-2	Nonlabor	Veh-Mi	0.0001	0.0141	0.0003	0.0008	0.0559	0.3692	0.0001	0.3692
167	PERSONNEL									
-1	Labor	Veh-Mi	0.0344	0.0120	0.0434	0.0664	0.0089	0.3094	0.0089	0.3094
-2	Nonlabor	Veh-Mi		0.0009	0.0074	-0.0558	0.0022	0.1020	-0.0558	0.1020
168	LEGAL									
-1	Labor	Veh-Mi	0.0599	0.1419	0.0272	0.0086	0.1175		0.0086	0.1419
-2	Nonlabor	Veh-Mi	0.0468	-0.0086	0.0139	0.0063	0.0087	0.0003	-0.0086	0.0468
169	INSURANCE									
-1	Labor	Veh-Mi	0.0127	0.0521	0.0782	0.0023	0.0194		0.0023	0.0521
-2	Insurance	Veh-Mi	0.0308	0.1323	0.0984	0.0984	0.0143	1.4432	0.0143	1.4432
-2	Other Nonlabor	Veh-Mi	0.0117	-0.0009		-0.0001	0.0027		-0.0009	0.0117
	Platform Hours		45,174	101,592	613,642	192,022	94,366	15,700		
	Vehicle Miles		1,420,400	1,125,500	5,427,600	2,252,100	1,084,000	233,900		
	Route Miles		30.2	55.9	147.6	41.1	26.0	17.4		
	Passengers		5,585,500	19,894,500	42,759,000	8,184,500	3,928,500	195,500		
	Stations		24	85	9	13	29	20		

O & M COST DATA BASE
STRATUM 3

1988 LIGHT RAIL
LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	TRI-MET 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	SCCTD 9013	MINIMUM	MAXIMUM
170	DATA PROCESSING									
-1	Labor	Veh-Mi	0.0819	0.0916	0.0322	0.0343	0.0467	0.2437	0.0322	0.2437
-2	Nonlabor	Veh-Mi	0.0355	0.0257	0.0092	0.0144	0.0122	0.1631	0.0092	0.1631
171	FINANCE/ACCOUNTING									
-1	Labor	Veh-Mi	0.1088	0.1043	0.0402	0.0811	0.0546	0.8192	0.0402	0.8192
-2	Nonlabor	Veh-Mi	0.0214	0.0046	-0.0007	0.0078	0.0342	0.2568	-0.0007	0.2568
172	PURCHASING/STORES									
-1	Labor	Veh-Mi	0.1060	0.0036	0.0381	0.0600	0.0045	0.4275	0.0036	0.4275
-2	Nonlabor	Veh-Mi	-0.0007	-0.0002	-0.0030	-0.0022	0.0007	0.1489	-0.0030	0.1489
173	GENERAL ENGINEERING									
-1	Labor	Veh-Mi	0.1472	0.1081	0.0193	0.0560	0.0553	0.1472	0.0193	0.1472
-2	Nonlabor	Veh-Mi	-0.0958	0.0076	-0.0031	-0.0099	0.0172	0.0172	-0.0958	0.0172
174	REAL ESTATE MANAGEMENT									
-1	Labor	Veh-Mi		0.1412	0.0025	0.0020	0.0940	0.1412	0.0020	0.1412
-2	Nonlabor	Veh-Mi		0.0145	0.0000	-0.0001	0.0148	0.0148	-0.0001	0.0148
175	OFFICE MANAGEMENT & SERVICES									
-1	Labor	Veh-Mi	0.0140	0.1852	0.0036	0.0189	0.1126	0.0024	0.0024	0.1852
-2	Nonlabor	Veh-Mi	0.0215	-0.0036	0.0005	0.0054	0.0344	0.1396	-0.0036	0.1396
176	GENERAL MANAGEMENT									
-1	Labor	Veh-Mi	0.0572	0.0687	0.0156	0.0677	0.0587	0.6344	0.0156	0.6344
-2	Nonlabor	Veh-Mi	0.0039	-0.0042	0.0049	-0.0016	-0.0042	0.0636	-0.0042	0.0636
162	CUSTOMER SERVICES									
-1	Labor	Plat-Hr	2.7632	0.1117	0.1597	0.6149	0.1370	2.0672	0.1117	2.7632
-2	Nonlabor	Plat-Hr	0.8496	0.0059	0.0031	0.2761	0.0139	1.6852	0.0031	1.6852
163	PROMOTION									
-1	Labor	Plat-Hr	2.7324	1.3077	0.0876	0.1855	0.3289	2.6767	0.0876	2.7324
-2	Nonlabor	Plat-Hr	1.4393	-1.0282	0.0587	0.0194	0.4477	9.5789	-1.0282	9.5789
164	MARKET RESEARCH									
-1	Labor	Plat-Hr	0.1571	0.8120	0.0323		0.7066		0.0323	0.8120
-2	Nonlabor	Plat-Hr	1.0043	0.0144	-0.0001		0.3376	0.1837	-0.0001	1.0043
	Platform Hours		45,174	101,592	613,642	192,022	94,366	15,700		
	Vehicle Miles		1,420,400	1,125,500	5,427,600	2,252,100	1,084,000	233,900		
	Route Miles		30.2	55.9	147.6	41.1	26.0	17.4		
	Passengers		5,585,500	19,894,500	42,759,000	8,184,500	3,928,500	195,500		
	Stations		24	85	9	13	29	20		

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 1988 LIGHT RAIL
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	TRI-MET 0008	MBTA 1003	SEPTA 3019	PAT 3022	CLEVELAND 5015	SCCTD 9013	MINIMUM	MAXIMUM
177	PLANNING									
-1	Labor	Plat-Hr	1.1441	0.2421	0.0329	0.2512	0.1516		0.0329	1.1441
-2	Nonlabor	Plat-Hr	1.2360	0.2904	-0.0131	-0.0942	0.0310	0.1359	-0.0942	1.2360
181	GENERAL FUNCTION									
-1	Labor	Veh-Mi	0.0137						0.0137	0.0137
-2	Nonlabor	Veh-Mi	0.3998		0.0621	0.3919	0.2605	0.2636	0.0621	0.3998

Platform Hours	45,174	101,592	613,642	192,022	94,366	15,700
Vehicle Miles	1,420,400	1,125,500	5,427,600	2,252,100	1,084,000	233,900
Route Miles	30.2	55.9	147.6	41.1	26.0	17.4
Passengers	5,585,500	19,894,500	42,759,000	8,184,500	3,928,500	195,500
Stations	24	85	9	13	29	20

Stratum 3
Motor Bus

**O & M COST DATA BASE
STRATUM 3
1986 MOTOR BUS
LEVEL A DETAIL
COST PER UNIT OF SERVICE**

ACCOU	DESCRIPTION	VARIABLE	Seattle 0001	Minneapolis 5027	Dallas 6004	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
011	VEHICLE OPERATIONS											
	TRANSPORTATION ADMIN											
-1	Labor	Plat-Hr	\$2.0396	\$0.5126	\$0.7136	\$0.3901	\$1.1359	\$0.4142	\$0.4944	\$0.8332	\$0.3901	\$1.1359
-2	Nonlabor	Plat-Hr	0.0487	0.0024	0.0075	0.0156	0.0128	0.0786	0.0169	0.0051	0.0024	0.0786
012	VEHICLE MOVEMENT CONTROL											
-1	Labor	Plat-Hr	1.1044	1.2873	1.1631	0.7298		1.6081	2.0254	2.2650	0.7298	2.2650
-2	Nonlabor	Plat-Hr	0.0010	0.0029	0.0302			0.0150	0.0572		0.0010	0.0572
021	SCHEDULING											
-1	Labor	Plat-Hr	0.9813	0.2161	0.1021	0.4670	0.1886	0.2981	0.3002	0.4873	0.1021	0.4873
-2	Contract Service	Plat-Hr	0.0134	0.0025	0.0001			0.0477	0.0129		0.0001	0.0477
-3	Other Nonlabor	Plat-Hr			0.0014			0.0006	0.0432		0.0006	0.0432
031	REVENUE VEHICLE OPERATIONS											
-1	Operators	Plat-Hr	20.9005	23.5542	15.2686	15.0581	19.8934	20.3901	24.1404	24.0211	15.0581	24.1404
-2	Fuel & Lube	Veh-Mi	0.1216	0.1411	0.2046	0.2395	0.2108	0.1331	0.0450	0.1962	0.0450	0.2395
-3	Tires & Tubes	Veh-Mi	0.0392	0.0221	0.0300	0.0240	0.0186	0.0472	0.0326	0.0461	0.0186	0.0472
-4	Electricity	Veh-Mi										
-5	Other Labor	Plat-Hr			0.0025	0.4051	0.4390		0.0056	0.1177	0.0025	0.4390
-6	Other Nonlabor	Plat-Hr	-0.0015		0.4257		0.2177		0.0636	0.1765	-0.0015	0.4257
	Platform Hours		2,137,829	2,037,928	1,562,416	1,055,706	1,870,196	2,025,242	2,161,404	1,178,521		
	Vehicle Miles		33,726,600	28,616,000	22,638,800	15,575,400	25,455,200	29,689,900	31,140,700	18,074,500		
	Fixed Guideway Mile		40	10	11	0	17	11	1	0		
	Passengers		61,323,400	72,693,100	48,355,000	37,110,300	52,386,300	53,547,000	Q	33,298,600		
	Peak Vehicles		841	813	602	396	601	625	684	328		

O & M COST DATA BASE

STRATUM 3

1986 MOTOR BUS

LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUN	DESCRIPTION	VARIABLE	Seattle 0001	Minneapolis 5027	Dallas 6004	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE											
-1	MAINTENANCE ADMINISTRATION	Veh-Mi	0.0987	0.0209	0.0297	0.0377	0.0169	0.0414	0.0356	0.1279	0.0169	0.1279
-2	Labor	Veh-Mi	0.0018		0.0009		0.0001	0.0046	0.0144		0.0001	0.0144
051	Nonlabor											
061	SERVICING REVENUE VEHICLES;											
062	INSPECTION & MAINTENANCE;											
062	ACCIDENT REPAIRS;											
071	VANDALISM REPAIRS											
-1	Labor	Veh-Mi	0.2982	0.5154	0.4140	0.2398	0.5350	0.4829	0.3994	0.3545	0.2398	0.5350
-2	Contract Service	Veh-Mi	0.0011	0.0002	0.0037	0.0001	0.0001	0.0166	0.0051	0.0115	0.0001	0.0166
-3	Parts	Veh-Mi	0.2234	0.1515	0.2333	0.1297	0.1576	0.2728	0.2023	0.1737	0.1297	0.2728
-4	Other Nonlabor	Veh-Mi			0.0004		0.0006		0.1184		0.0004	0.1184
081	SERVICING SERVICE VEHICLES;											
091	INSPECTION & MAINTENANCE											
-1	Labor	Veh-Mi	0.0085		0.0036	0.0030	0.0140	0.0181	0.0026	0.0056	0.0026	0.0181
-2	Contract Service	Veh-Mi	0.0010		0.0005		0.0001	0.0008	0.0001	0.0009	0.0001	0.0009
-3	Fuel/Lube Service Vehicles	Veh-Mi	0.0045	0.0019	0.0044	0.0029	0.0064	0.0018	0.0001	0.0036	0.0001	0.0064
-4	Tires/Tubes Service Vehicles	Veh-Mi	0.0006	0.0001	0.0004		0.0003	0.0011		0.0003	0.0001	0.0011
-5	Parts	Veh-Mi	0.0058	0.0018	0.0032	0.0011	0.0055	0.0040	0.0019	0.0022	0.0011	0.0055
-6	Other Nonlabor	Veh-Mi	0.0013		0.0004	0.0003				0.0002	0.0002	0.0004
	Platform Hours		2,137,829	2,037,928	1,562,416	1,055,706	1,870,196	2,025,242	2,161,404	1,178,521		
	Vehicle Miles		33,726,600	28,616,000	22,638,800	15,575,400	25,455,200	29,689,900	31,140,700	18,074,500		
	Fixed Guideway Mile		40	10	11	0	17	11	1	0		
	Passengers		61,323,400	72,693,100	48,355,000	37,110,300	52,386,300	53,547,000	Q	33,298,600		
	Peak Vehicles		841	813	602	396	601	625	684	328		

O & M COST DATA BASE
STRATUM 3

1986 MOTOR BUS

LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUN	DESCRIPTION	VARIABLE	Seattle 0001	Minneapolis 5027	Dallas 6004	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
042	NON-VEHICLE MAINTENANCE											
-1	MAINTENANCE ADMINISTRATION											
-1	Labor	Veh-Mi	0.0411	0.0022	0.0024	0.0014	0.0147	0.0158		0.0059	0.0014	0.0158
-2	Nonlabor	Veh-Mi	0.0017	0.0001	0.0004		0.0002				0.0001	0.0004
101	MOVEMENT CONTROL											
-1	Labor	Veh-Mi		0.0055	0.0009				0.0252		0.0009	0.0252
-2	Contract Service	Veh-Mi	0.0030	0.0001	0.0011	0.0003			0.0011	0.0160	0.0001	0.0160
-3	Parts	Veh-Mi		0.0013			0.0006		0.0030	0.0001	0.0001	0.0030
-4	Other Nonlabor	Veh-Mi							0.0001		0.0001	0.0001
111	FARE COLLECTION/COUNTING											
-1	Labor	Pk-Veh	149		704	36	1049	246	18	488	18	1049
-2	Contract Service	Pk-Veh	3	4	14	17	3	41	3	11	3	41
-3	Parts	Pk-Veh	19	32	295	1	88	22	1	23	1	295
-4	Other Nonlabor	Pk-Veh	1								1	1
126	COMMUNICATION SYSTEMS											
-1	Labor	Pk-Veh	2					131			2	131
-2	Contract Service	Pk-Veh	1	25			2				1	25
-3	Parts	Pk-Veh					1	60			1	60
-4	Other Nonlabor	Pk-Veh						103			103	103
121	ROADWAY/TRACK											
-1	Labor	FG Rte-Mi	5239				1198				1198	1198
-2	Contract Service	FG Rte-Mi	2319				320	20198			320	20198
-3	Parts	FG Rte-Mi	854				800				800	800
-4	Other Nonlabor	FG Rte-Mi										
122	STRUCTURES/TUNNEL/SUBWAY											
-1	Labor	FG Rte-Mi	13281								13281	13281
-2	Contract Service	FG Rte-Mi	684								684	684
-3	Parts	FG Rte-Mi	945								945	945
-4	Other Nonlabor	FG Rte-Mi	1								1	1
	Platform Hours		2,137,829	2,037,928	1,562,416	1,055,706	1,870,196	2,025,242	2,161,404	1,178,521		
	Vehicle Miles		33,726,600	28,616,000	22,638,800	15,575,400	25,455,200	29,689,900	31,140,700	18,074,500		
	Fixed Guideway Mile		40	10	11	0	17	11	1	0		
	Passengers		61,323,400	72,693,100	48,355,000	37,110,300	52,386,300	53,547,000	Q	33,298,600		
	Peak Vehicles		841	813	602	396	601	625	684	328		

O & M COST DATA BASE
STRATUM 3

1986 MOTOR BUS
LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUN	DESCRIPTION	VARIABLE	Seattle 0001	Minneapolis 5027	Dallas 6004	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
123	PASSENGER STATIONS;											
124	OPERATING STAT BLDG GROUNDS EQUIP;											
125	GARAGE/SHOP BLDG;											
127	GENERAL ADMIN BLDG GROUNDS EQUIP;											
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;											
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP											
-1	Labor	Pk-Veh	2873	2298	1723	2010	2874	3993	1436	1766	1436	3993
-2	Contract Service	Pk-Veh	387	216	246	223	832	2249	462	2406	216	2406
-3	Parts	Pk-Veh	860	338	616	800	866	1139		273	273	1139
-4	Other Nonlabor	Pk-Veh	30		10			3316	23		10	3316
141	OPERATION/MAINT POWER FACILITIES											
-1	Labor	Veh-Mi										
-2	Contract Service	Veh-Mi										
-3	Parts	Veh-Mi										
-4	Other Nonlabor	Veh-Mi										
	Platform Hours		2,137,829	2,037,928	1,562,416	1,055,706	1,870,196	2,025,242	2,161,404	1,178,521		
	Vehicle Miles		33,726,600	28,616,000	22,638,800	15,575,400	25,455,200	29,689,900	31,140,700	18,074,500		
	Fixed Guideway Mile		40	10	11	0	17	11	1	0		
	Passengers		61,323,400	72,693,100	48,355,000	37,110,300	52,386,300	53,547,000	Q	33,298,600		
	Peak Vehicles		841	813	602	396	601	625	684	328		

O & M COST DATA BASE
 STRATUM 3
 1986 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUN	DESCRIPTION	VARIABLE	Seattle 0001	Minneapolis 5027	Dallas 6004	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
145	GENERAL ADMINISTRATION											
-1	PRELIMINARY TRANSIT SYSTEM DEVELOP	Veh-Mi	0.0032	0.0007		0.0004		0.0215		0.0221	0.0007	0.0221
-2	Labor	Veh-Mi						0.0056		0.0008	0.0004	0.0056
151	TICKETING/FARE COLLECTION											
-1	Labor	Passengers	0.0064	0.0116	0.0033	0.0054	0.0038	0.0154		0.0026	0.0026	0.0154
-2	Supplies	Passengers	0.0003	0.0021	-0.0001	0.0015	0.0044	0.0008		0.0008	-0.0001	0.0044
-3	Other Nonlabor	Passengers	0.0002		0.0050	0.0002	0.0063	0.0036			0.0002	0.0063
161	SYSTEM SECURITY											
-1	Labor	Veh-Mi	0.0010	0.0153		0.0035	0.0019	0.0026	0.0018	0.0090	0.0018	0.0153
-2	Contract Service	Veh-Mi		0.0043		0.0035	0.0349	0.0046	0.0431	0.0012	0.0010	0.0431
-3	Other Nonlabor	Veh-Mi		0.0000			-0.0003	0.0003			-0.0003	0.0003
165	INJURIES/DAMAGES											
-1	Labor	Veh-Mi	0.0369	0.0170	0.0146	0.0034		0.0068	0.0080	0.0073	0.0034	0.0170
-2	Claims	Veh-Mi	0.0040	0.1011	0.0173	0.0200	0.0644	0.0376	0.1155	0.0848	0.0173	0.1155
-3	Other Nonlabor	Veh-Mi		0.0109	0.0006	0.0073		0.0044	0.0005	0.0240	0.0005	0.0240
166	SAFETY											
-1	Labor	Veh-Mi	0.0218	0.0085	0.0103	0.0191	0.0139	0.0033	0.0002		0.0002	0.0191
-2	Nonlabor	Veh-Mi	0.0006	0.0001	0.0010	0.0010	0.0004	0.0005	0.0006	0.0007	0.0001	0.0010
167	PERSONNEL											
-1	Labor	Veh-Mi	0.0320	0.0158	0.0196	0.0144	0.0205	0.0330	0.0329	0.0257	0.0144	0.0330
-2	Nonlabor	Veh-Mi	0.0017	0.0073	0.0011	0.0019	0.0082	0.0167	0.0090	0.0078	0.0011	0.0167
168	LEGAL											
-1	Labor	Veh-Mi	0.0014			0.0032		0.0068	0.0155		0.0014	0.0155
-2	Nonlabor	Veh-Mi	0.0143	0.0026		0.0304		0.0090	0.0065	0.0127	0.0026	0.0304
169	INSURANCE											
-1	Labor	Veh-Mi	0.0038	0.0163	0.0065	0.0017	0.0039	0.0081	0.0036		0.0036	0.0081
-2	Insurance	Veh-Mi	0.0265				0.0400	0.0048	0.0378	0.0343	0.0017	0.0400
-2	Other Nonlabor	Veh-Mi	0.0018	0.0003			0.0279	0.0009	0.0076	0.0002	0.0002	0.0279
	Platform Hours		2,137,829	2,037,928	1,562,416	1,055,706	1,870,196	2,025,242	2,161,404	1,178,521		
	Vehicle Miles		33,726,600	28,616,000	22,638,800	15,575,400	25,455,200	29,689,900	31,140,700	18,074,500		
	Fixed Guideway Mile		40	10	11	0	17	11	1	0		
	Passengers		61,323,400	72,693,100	48,355,000	37,110,300	52,386,300	53,547,000	Q	33,298,600		
	Peak Vehicles		841	813	602	396	601	625	684	328		

O & M COST DATA BASE
 STRATUM 3
 1986 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUN	DESCRIPTION	VARIABLE	Seattle 0001	Minneapolis 5027	Dallas 6004	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
170	DATA PROCESSING											
-1	Labor	Veh-Mi	0.0178	0.0208	0.0070	0.0067	0.0367	0.0229	0.0350	0.0447	0.0067	0.0447
-2	Nonlabor	Veh-Mi	0.0114	0.0097	0.0206	0.0045	0.0171	0.0109	0.0123	0.0152	0.0045	0.0206
171	FINANCE/ACCOUNTING											
-1	Labor	Veh-Mi	0.0361	0.0562	0.0245	0.0240	0.0469	0.0482	0.0302	0.0595	0.0240	0.0595
-2	Nonlabor	Veh-Mi	0.0078	0.0035	0.0005	0.0034	0.0021	0.0038	0.0069	0.0017	0.0005	0.0069
172	PURCHASING/STORES											
-1	Labor	Veh-Mi	0.0385	0.0393	0.0397	0.0181	0.0727	0.0698	0.0497	0.0691	0.0181	0.0727
-2	Nonlabor	Veh-Mi	0.0002	0.0025	0.0025		0.0243	0.0030	0.0018	0.0015	0.0002	0.0243
173	GENERAL ENGINEERING											
-1	Labor	Veh-Mi	0.0044	0.0036			0.0078	0.0373		0.0143	0.0036	0.0373
-2	Nonlabor	Veh-Mi	0.0000	0.0003			-0.0008	0.0088		0.0013	-0.0008	0.0088
174	REAL ESTATE MANAGEMENT											
-1	Labor	Veh-Mi						0.0019			0.0019	0.0019
-2	Nonlabor	Veh-Mi						0.0024			0.0024	0.0024
175	OFFICE MANAGEMENT & SERVICES											
-1	Labor	Veh-Mi	0.0108	0.0093	0.0051	0.0033	0.0062	0.0133		0.0303	0.0033	0.0303
-2	Nonlabor	Veh-Mi	0.0031	0.0001	0.0003	0.0042	0.0062	0.0148		0.0188	0.0001	0.0188
176	GENERAL MANAGEMENT											
-1	Labor	Veh-Mi	0.0547	0.0121	0.0186	0.0426	0.0008	0.0231	0.0994	0.0421	0.0008	0.0994
-2	Nonlabor	Veh-Mi	0.0077	0.0116	0.0010	0.0005	0.0359	0.0088	0.0241	0.0011	0.0005	0.0359
162	CUSTOMER SERVICES											
-1	Labor	Plat-Hr	1.2175	0.4944	0.5297	0.4043	0.4616	0.7599	0.3955	0.6495	0.3955	0.7599
-2	Nonlabor	Plat-Hr	0.1682	0.0702	0.1127	0.1951	0.2555	0.3244	0.0331	0.0018	0.0018	0.3244
163	PROMOTION											
-1	Labor	Plat-Hr	0.0512	0.1101	0.0905	0.1331	0.1293	0.0578	0.1118	0.3952	0.0512	0.3952
-2	Nonlabor	Plat-Hr	0.4161	0.3457	0.0457	0.5239	0.3396	0.1931	0.2394	0.3751	0.0457	0.5239
164	MARKET RESEARCH											
-1	Labor	Plat-Hr	0.0721	0.1302	0.2445	0.0352	0.5513	0.0899		0.4945	0.0352	0.5513
-2	Nonlabor	Plat-Hr	0.0168	0.0044	0.0075	0.0148	0.0594	0.0229		0.0136	0.0044	0.0594
	Platform Hours		2,137,829	2,037,928	1,562,416	1,055,706	1,870,196	2,025,242	2,161,404	1,178,521		
	Vehicle Miles		33,726,600	28,616,000	22,638,800	15,575,400	25,455,200	29,689,900	31,140,700	18,074,500		
	Fixed Guideway Mile		40	10	11	0	17	11	1	0		
	Passengers		61,323,400	72,693,100	48,355,000	37,110,300	52,386,300	53,547,000	Q	33,298,600		
	Peak Vehicles		841	813	602	396	601	625	684	328		

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STRATUM 3

1986 MOTOR BUS

LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUN	DESCRIPTION	VARIABLE	Seattle 0001	Minneapolis 5027	Dallas 6004	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
177	PLANNING											
-1	Labor	Plat-Hr	0.1043	0.0228		0.2972	0.1279	0.1818	0.1580	0.1348	0.0228	0.2972
-2	Nonlabor	Plat-Hr	0.0002			0.0449	0.0053	0.0154	0.0890	0.0001	0.0001	0.0890
181	GENERAL FUNCTION											
-1	Labor	Veh-Mi							0.0019		0.0019	0.0019
-2	Nonlabor	Veh-Mi	0.1381	0.0324	0.0724	0.0649	0.1157	0.0007	0.0871	0.1173	0.0007	0.1173
	Platform Hours		2,137,829	2,037,928	1,562,416	1,055,706	1,870,196	2,025,242	2,161,404	1,178,521		
	Vehicle Miles		33,726,600	28,616,000	22,638,800	15,575,400	25,455,200	29,689,900	31,140,700	18,074,500		
	Fixed Guideway Mile		40	10	11	0	17	11	1	0		
	Passengers		61,323,400	72,693,100	48,355,000	37,110,300	52,386,300	53,547,000	Q	33,298,600		
	Peak Vehicles		841	813	602	396	601	625	684	328		

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Dallas 6004	Houston 6008	San Antonio 6011	Bi State 7006	Denver 8006
011	VEHICLE OPERATIONS									
-1	TRANSPORTATION ADMIN									
	Labor	Plat-Hr	\$0.4531	\$0.8006	\$0.5040	\$0.9669	\$0.2191	\$0.5107	\$1.1483	\$0.3925
-2	Nonlabor	Plat-Hr	0.0505	0.0028	0.0071	0.0216	0.0027	0.0321	0.0102	0.0605
012	VEHICLE MOVEMENT CONTROL									
-1	Labor	Plat-Hr	1.4239	1.6402	1.3759	1.2491	1.0441	0.6450		1.8048
-2	Nonlabor	Plat-Hr	0.0016		0.0018	0.0278	-0.0070			0.0150
021	SCHEDULING									
-1	Labor	Plat-Hr	0.3745	0.3601	0.2313	0.1051	0.4401	0.3690	0.1866	0.3194
-2	Contract Service	Plat-Hr	0.0016	0.0079	0.0029		0.0864			0.0041
-3	Other Nonlabor	Plat-Hr	0.0091			0.0002	0.0171			0.0006
031	REVENUE VEHICLE OPERATIONS									
-1	Operators	Plat-Hr	21.0530	21.9481	24.1909	16.4306	15.4251	15.7904	20.0895	21.1691
-2	Fuel & Lube	Veh-Mi	0.1353	2.7933	0.1695	0.1811	0.1440	0.1375	0.1342	0.1414
-3	Tires & Tubes	Veh-Mi	0.0237	0.6652	0.0188	0.0349	0.0448	0.0257	0.0249	0.0370
-4	Electricity	Veh-Mi								
-5	Other Labor	Plat-Hr		0.0372		0.0002	3.3041		0.3914	
-6	Other Nonlabor	Plat-Hr	0.0003	0.5245		0.6848	0.9525	0.3937	0.0006	
	Platform Hours		1,532,940	797,945	2,029,220	1,344,454	2,377,444	1,129,501	1,820,294	1,883,531
	Vehicle Miles		18,641,700	671,900	28,346,000	21,115,300	32,558,100	16,807,500	24,842,100	28,292,700
	Fixed Guideway Mile		0	1	15	11	41	0	17	12
	Passengers		73,346,100	118,300	70,772,200	41,117,100	71,183,100	37,699,700	47,751,700	50,671,500
	Peak Vehicles		432	249	813	534	654	399	577	604

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
011	VEHICLE OPERATIONS					
	TRANSPORTATION ADMIN					
-1	Labor	Plat-Hr	\$0.4100	\$1.0242	\$0.2191	\$1.1483
-2	Nonlabor	Plat-Hr	0.0123	0.0114	0.0027	0.0605
012	VEHICLE MOVEMENT CONTROL					
-1	Labor	Plat-Hr	2.1896	2.4001	0.6450	2.4001
-2	Nonlabor	Plat-Hr	0.0449	0.0003	-0.0070	0.0449
021	SCHEDULING					
-1	Labor	Plat-Hr	0.2844	0.5186	0.1051	0.5186
-2	Contract Service	Plat-Hr	0.0211		0.0016	0.0864
-3	Other Nonlabor	Plat-Hr	0.0165		0.0002	0.0171
031	REVENUE VEHICLE OPERATIONS					
-1	Operators	Plat-Hr	25.8459	23.4611	15.4251	25.8459
-2	Fuel & Lube	Veh-Mi	0.0992	0.1322	0.0992	2.7933
-3	Tires & Tubes	Veh-Mi	0.0439	0.0427	0.0188	0.6652
-4	Electricity	Veh-Mi				
-5	Other Labor	Plat-Hr	0.0030	0.2258	0.0002	3.3041
-6	Other Nonlabor	Plat-Hr	0.0731	0.1179	0.0003	0.9525

Platform Hours	2,226,301	1,155,276
Vehicle Miles	31,309,800	17,286,400
Fixed Guideway Mile	1	0
Passengers	60,277,400	30,319,300
Peak Vehicles	672	332

O & M COST DATA BASE

STRATUM 3

1987 MOTOR BUS

LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Dallas 6004	Houston 6008	San Antonio 6011	Bi State 7006	Denver 8006
041	VEHICLE MAINTENANCE									
-1	MAINTENANCE ADMINISTRATION									
-2	Labor	Veh-Mi	0.1195	1.3711	0.0225	0.0452	0.1212	0.0371	0.0111	0.0479
	Nonlabor	Veh-Mi	0.0032	0.0058	0.0004	0.0016	0.0091	0.0000	0.0026	-0.0056
051	SERVICING REVENUE VEHICLES;									
061	INSPECTION & MAINTENANCE;									
062	ACCIDENT REPAIRS;									
071	VANDALISM REPAIRS									
-1	Labor	Veh-Mi	0.3938	10.0436	0.5354	0.4326	0.6065	0.2456	0.5873	0.4615
-2	Contract Service	Veh-Mi	0.0008	0.0451	0.0003	0.0050	0.0109	0.0000	0.0003	0.0090
-3	Parts	Veh-Mi	0.1874	3.5866	0.1302	0.2319	0.1929	0.1380	0.2198	0.2192
-4	Other Nonlabor	Veh-Mi	-0.0029			0.0004	-0.0802	0.0000	0.0008	0.0000
081	SERVICING SERVICE VEHICLES;									
091	INSPECTION & MAINTENANCE									
-1	Labor	Veh-Mi	0.0048	0.0522		0.0043		0.0023	0.0055	0.0186
-2	Contract Service	Veh-Mi	0.0002	0.0049	0.0001	0.0001		0.0009	0.0005	0.0061
-3	Fuel/Lube Service Vehicles	Veh-Mi		0.0351	0.0018	0.0030	0.0053	0.0009	0.0046	0.0021
-4	Tires/Tubes Service Vehicles	Veh-Mi		0.0027	0.0002			0.0002	0.0005	0.0006
-5	Parts	Veh-Mi	0.0023	0.0181	0.0018	0.0025		0.0018	0.0042	0.0045
-6	Other Nonlabor	Veh-Mi	0.0004	0.0027		0.0005	0.0308	0.0002		

Platform Hours	1,532,940	797,945	2,029,220	1,344,454	2,377,444	1,129,501	1,820,294	1,883,531
Vehicle Miles	18,641,700	671,900	28,346,000	21,115,300	32,558,100	16,807,500	24,842,100	28,292,700
Fixed Guideway Mile	0	1	15	11	41	0	17	12
Passengers	73,346,100	118,300	70,772,200	41,117,100	71,183,100	37,699,700	47,751,700	50,671,500
Peak Vehicles	432	249	813	534	654	399	577	604

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE					
-1	MAINTENANCE ADMINISTRATION					
-2	Labor	Veh-Mi	0.0358	0.1585	0.0111	1.3711
-2	Nonlabor	Veh-Mi	0.0072	0.0000	-0.0056	0.0091
051	SERVICING REVENUE VEHICLES;					
061	INSPECTION & MAINTENANCE;					
062	ACCIDENT REPAIRS;					
071	VANDALISM REPAIRS					
-1	Labor	Veh-Mi	0.4450	0.3533	0.2456	10.0436
-2	Contract Service	Veh-Mi	0.0063	0.0155	0.0003	0.0451
-3	Parts	Veh-Mi	0.1845	0.1889	0.1302	3.5866
-4	Other Nonlabor	Veh-Mi	0.0193	0.0000	-0.0802	0.0193
081	SERVICING SERVICE VEHICLES;					
091	INSPECTION & MAINTENANCE					
-1	Labor	Veh-Mi	0.0006	0.0061	0.0006	0.0522
-2	Contract Service	Veh-Mi		0.0014	0.0001	0.0061
-3	Fuel/Lube Service Vehicles	Veh-Mi	0.0006	0.0034	0.0006	0.0351
-4	Tires/Tubes Service Vehicles	Veh-Mi		0.0002	0.0002	0.0027
-5	Parts	Veh-Mi	0.0013	0.0021	0.0013	0.0181
-6	Other Nonlabor	Veh-Mi		0.0002	0.0002	0.0308

Platform Hours	2,226,301	1,155,276
Vehicle Miles	31,309,800	17,286,400
Fixed Guideway Mile	1	0
Passengers	60,277,400	30,319,300
Peak Vehicles	672	332

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Dallas 6004	Houston 6008	San Antonio 6011	Bi State 7006	Denver 8006
042	NON-VEHICLE MAINTENANCE									
-1	MAINTENANCE ADMINISTRATION									
-1	Labor	Veh-Mi	0.0058	0.1380	0.0023	0.0029		0.0013	0.0225	0.0191
-2	Nonlabor	Veh-Mi	0.0002		0.0002	0.0003	0.0101		0.0003	0.0080
101	MOVEMENT CONTROL									
-1	Labor	Veh-Mi			0.0060	0.0011	0.0130			
-2	Contract Service	Veh-Mi	0.0037	0.0614		0.0015	0.0005	0.0003		
-3	Parts	Veh-Mi			0.0026	0.0031	0.0014			
-4	Other Nonlabor	Veh-Mi					0.0007			
111	FARE COLLECTION/COUNTING									
-1	Labor	Pk-Veh	101	415		681			885	231
-2	Contract Service	Pk-Veh			8	23			6	27
-3	Parts	Pk-Veh	137	43	35	245			40	48
-4	Other Nonlabor	Pk-Veh	10				281			
126	COMMUNICATION SYSTEMS									
-1	Labor	Pk-Veh							5	143
-2	Contract Service	Pk-Veh	4							75
-3	Parts	Pk-Veh								188
-4	Other Nonlabor	Pk-Veh	48							
121	ROADWAY/TRACK									
-1	Labor	FG Rte-Mi							1741	
-2	Contract Service	FG Rte-Mi							34	22541
-3	Parts	FG Rte-Mi							1409	
-4	Other Nonlabor	FG Rte-Mi								
122	STRUCTURES/TUNNEL/SUBWAY									
-1	Labor	FG Rte-Mi								
-2	Contract Service	FG Rte-Mi								
-3	Parts	FG Rte-Mi								
-4	Other Nonlabor	FG Rte-Mi								
Platform Hours			1,532,940	797,945	2,029,220	1,344,454	2,377,444	1,129,501	1,820,294	1,883,531
Vehicle Miles			18,641,700	671,900	28,346,000	21,115,300	32,558,100	16,807,500	24,842,100	28,292,700
Fixed Guideway Mile			0	1	15	11	41	0	17	12
Passengers			73,346,100	118,300	70,772,200	41,117,100	71,183,100	37,699,700	47,751,700	50,671,500
Peak Vehicles			432	249	813	534	654	399	577	604

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
042	NON-VEHICLE MAINTENANCE					
-1	MAINTENANCE ADMINISTRATION					
-2	Labor	Veh-Mi		0.0082	0.0013	0.1380
-2	Nonlabor	Veh-Mi			0.0002	0.0101
101	MOVEMENT CONTROL					
-1	Labor	Veh-Mi	0.0150		0.0011	0.0150
-2	Contract Service	Veh-Mi	0.0011	0.0161	0.0003	0.0614
-3	Parts	Veh-Mi	0.0046	0.0004	0.0001	0.0046
-4	Other Nonlabor	Veh-Mi			0.0007	0.0007
111	FARE COLLECTION/COUNTING					
-1	Labor	Pk-Veh	603	426	101	885
-2	Contract Service	Pk-Veh		15	6	27
-3	Parts	Pk-Veh		19	19	245
-4	Other Nonlabor	Pk-Veh			10	281
126	COMMUNICATION SYSTEMS					
-1	Labor	Pk-Veh			143	143
-2	Contract Service	Pk-Veh			4	5
-3	Parts	Pk-Veh			75	75
-4	Other Nonlabor	Pk-Veh			48	188
121	ROADWAY/TRACK					
-1	Labor	FG Rte-Mi			1741	1741
-2	Contract Service	FG Rte-Mi			34	22541
-3	Parts	FG Rte-Mi			1409	1409
-4	Other Nonlabor	FG Rte-Mi				
122	STRUCTURES/TUNNEL/SUBWAY					
-1	Labor	FG Rte-Mi				
-2	Contract Service	FG Rte-Mi				
-3	Parts	FG Rte-Mi				
-4	Other Nonlabor	FG Rte-Mi				

Platform Hours	2,226,301	1,155,276
Vehicle Miles	31,309,800	17,286,400
Fixed Guideway Mile	1	0
Passengers	60,277,400	30,319,300
Peak Vehicles	672	332

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Dallas 6004	Houston 6008	San Antonio 6011	Bi State 7006	Denver 8006
123	PASSENGER STATIONS;									
124	OPERATING STAT BLDG GROUNDS EQUIP;									
125	GARAGE/SHOP BLDG;									
127	GENERAL ADMIN BLDG GROUNDS EQUIP;									
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;									
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP									
-1	Labor	Pk-Veh	2550	3350	2384	2035	2764		2346	4214
-2	Contract Service	Pk-Veh	550	987	224	600	1091		901	2116
-3	Parts	Pk-Veh	1645	536	434	556	1151		1053	1044
-4	Other Nonlabor	Pk-Veh	2			2	2226			3542
141	OPERATION/MAINT POWER FACILITIES									
-1	Labor	Veh-Mi								
-2	Contract Service	Veh-Mi								
-3	Parts	Veh-Mi								
-4	Other Nonlabor	Veh-Mi								
		Platform Hours	1,532,940	797,945	2,029,220	1,344,454	2,377,444	1,129,501	1,820,294	1,883,531
		Vehicle Miles	18,641,700	671,900	28,346,000	21,115,300	32,558,100	16,807,500	24,842,100	28,292,700
		Fixed Guideway Mile	0	1	15	11	41	0	17	12
		Passengers	73,346,100	118,300	70,772,200	41,117,100	71,183,100	37,699,700	47,751,700	50,671,500
		Peak Vehicles	432	249	813	534	654	399	577	604

**O & M COST DATA BASE
STRATUM 3
1987 MOTOR BUS
LEVEL A DETAIL
COST PER UNIT OF SERVICE**

ACCOUNT	DESCRIPTION	VARIABLE	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
123	PASSENGER STATIONS;					
124	OPERATING STAT BLDG GROUNDS EQUIP;					
125	GARAGE/SHOP BLDG;					
127	GENERAL ADMIN BLDG GROUNDS EQUIP;					
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;					
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP					
-1	Labor	Pk-Veh	1699	2055	1699	4214
-2	Contract Service	Pk-Veh	480	2204	224	2204
-3	Parts	Pk-Veh	292	237	237	1151
-4	Other Nonlabor	Pk-Veh	20		2	3542
141	OPERATION/MAINT POWER FACILITIES					
-1	Labor	Veh-Mi				
-2	Contract Service	Veh-Mi				
-3	Parts	Veh-Mi				
-4	Other Nonlabor	Veh-Mi				

Platform Hours	2,226,301	1,155,276
Vehicle Miles	31,309,800	17,286,400
Fixed Guideway Mile	1	0
Passengers	60,277,400	30,319,300
Peak Vehicles	672	332

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Dallas 6004	Houston 6008	San Antonio 6011	Bi State 7006	Denver 8006
145	GENERAL ADMINISTRATION									
-1	PRELIMINARY TRANSIT SYSTEM DEVELOP	Veh-Mi								0.0266
-2	Labor	Veh-Mi					0.1142			0.0154
-2	Nonlabor	Veh-Mi					-0.1073			
151	TICKETING/FARE COLLECTION									
-1	Labor	Passengers	0.0070	1.3003	0.0128	0.0043	0.0086	0.0048	0.0042	0.0198
-2	Supplies	Passengers	0.0011	0.0154	0.0020			0.0016	0.0048	0.0017
-3	Other Nonlabor	Passengers	0.0045	0.1477		0.0071	-0.0021	0.0002	0.0076	0.0015
161	SYSTEM SECURITY									
-1	Labor	Veh-Mi	0.0060		0.0127		0.0550		0.0028	0.0029
-2	Contract Service	Veh-Mi	0.0015	0.0702	0.0068		0.0112	0.0032	0.0429	0.0039
-3	Other Nonlabor	Veh-Mi			0.0021		0.0042			0.0001
165	INJURIES/DAMAGES									
-1	Labor	Veh-Mi	0.0201	0.3432	0.0176	0.0165	0.0157	0.0036		0.0087
-2	Claims	Veh-Mi	0.0333	0.3122	0.1179	0.0388	0.1569	0.0241	0.0735	0.0434
-3	Other Nonlabor	Veh-Mi	0.0172	0.1752	0.0128	0.0009	0.0699	0.0050		0.0038
166	SAFETY									
-1	Labor	Veh-Mi	0.0092	0.0868	0.0089	0.0099	0.0133	0.0133	0.0128	0.0044
-2	Nonlabor	Veh-Mi	0.0002	0.0592	0.0001	0.0023	-0.0013	0.0011	0.0004	0.0007
167	PERSONNEL									
-1	Labor	Veh-Mi	0.0180	0.4381	0.0174	0.0193	0.0936	0.0173	0.0328	0.0382
-2	Nonlabor	Veh-Mi	0.0086	0.0600	0.0066	0.0009	-0.0713	0.0028	0.0076	0.0169
168	LEGAL									
-1	Labor	Veh-Mi					0.0067	0.0005		0.0074
-2	Nonlabor	Veh-Mi					0.0185	0.0099		0.0047
169	INSURANCE									
-1	Labor	Veh-Mi	0.0006	0.0043					0.1288	0.0083
-2	Insurance	Veh-Mi	0.0059	0.4288	0.0060	0.0078	0.0087	0.0024	0.0362	0.0008
-2	Other Nonlabor	Veh-Mi	0.0001		0.0006				0.0290	0.0010
	Platform Hours		1,532,940	797,945	2,029,220	1,344,454	2,377,444	1,129,501	1,820,294	1,883,531
	Vehicle Miles		18,641,700	671,900	28,346,000	21,115,300	32,558,100	16,807,500	24,842,100	28,292,700
	Fixed Guideway Mile		0	1	15	11	41	0	17	12
	Passengers		73,346,100	118,300	70,772,200	41,117,100	71,183,100	37,699,700	47,751,700	50,671,500
	Peak Vehicles		432	249	813	534	654	399	577	604

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
	GENERAL ADMINISTRATION					
145	PRELIMINARY TRANSIT SYSTEM DEVELOP					
-1	Labor	Veh-Mi		0.0210	0.0003	0.1142
-2	Nonlabor	Veh-Mi		0.0081	-0.1073	0.0154
151	TICKETING/FARE COLLECTION					
-1	Labor	Passengers	0.0129	0.0037	0.0037	1.3003
-2	Supplies	Passengers	0.0036	0.0011	0.0011	0.0154
-3	Other Nonlabor	Passengers	0.0061		-0.0021	0.1477
161	SYSTEM SECURITY					
-1	Labor	Veh-Mi	0.0020	0.0106	0.0020	0.0550
-2	Contract Service	Veh-Mi	0.0474	0.0010	0.0010	0.0702
-3	Other Nonlabor	Veh-Mi	0.0001		0.0001	0.0042
165	INJURIES/DAMAGES					
-1	Labor	Veh-Mi	0.0071	0.0088	0.0036	0.3432
-2	Claims	Veh-Mi	0.0567	0.0107	0.0107	0.3122
-3	Other Nonlabor	Veh-Mi	0.0022	0.0203	0.0009	0.1752
166	SAFETY					
-1	Labor	Veh-Mi	0.0005	0.0029	0.0005	0.0868
-2	Nonlabor	Veh-Mi	0.0017	0.0006	-0.0013	0.0592
167	PERSONNEL					
-1	Labor	Veh-Mi	0.0395	0.0408	0.0173	0.4381
-2	Nonlabor	Veh-Mi	0.0145	0.0098	-0.0713	0.0600
168	LEGAL					
-1	Labor	Veh-Mi	0.0134		0.0005	0.0134
-2	Nonlabor	Veh-Mi	0.0130	0.0196	0.0026	0.1751
169	INSURANCE					
-1	Labor	Veh-Mi	0.0072		0.0006	0.1288
-2	Insurance	Veh-Mi	0.0772	0.0101	0.0008	0.4288
-2	Other Nonlabor	Veh-Mi	0.0070		0.0001	0.0290

Platform Hours	2,226,301	1,155,276
Vehicle Miles	31,309,800	17,286,400
Fixed Guideway Mile	1	0
Passengers	60,277,400	30,319,300
Peak Vehicles	672	332

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Dallas 6004	Houston 6008	San Antonio 6011	Bi State 7006	Denver 8006
170	DATA PROCESSING									
-1	Labor	Veh-Mi	0.0138	0.5285	0.0227	0.0100	0.0219	0.0114	0.0379	0.0271
-2	Nonlabor	Veh-Mi	0.0084	0.1637	0.0112	0.0305	0.0019	0.0045	0.0142	0.0168
171	FINANCE/ACCOUNTING									
-1	Labor	Veh-Mi	0.0356	0.7359	0.0563	0.0285	0.0500	0.0220	0.0444	0.0554
-2	Nonlabor	Veh-Mi	0.0033	0.0951	0.0030	0.0004	0.0048	0.0033	0.0013	0.0031
172	PURCHASING/STORES									
-1	Labor	Veh-Mi	0.0363	0.9365	0.0388	0.0452	0.1040	0.0182	0.0786	0.0724
-2	Nonlabor	Veh-Mi	0.0012	0.0198	0.0000	0.0003	-0.0124	0.0003	0.0041	0.0051
173	GENERAL ENGINEERING									
-1	Labor	Veh-Mi			0.0043		0.1224	0.0001	0.0073	0.0365
-2	Nonlabor	Veh-Mi			0.0005		-0.1426		-0.0011	-0.0155
174	REAL ESTATE MANAGEMENT									
-1	Labor	Veh-Mi					0.0001			0.0022
-2	Nonlabor	Veh-Mi	0.0000	0.0000	0.0033		-0.0001			0.0034
175	OFFICE MANAGEMENT & SERVICES									
-1	Labor	Veh-Mi	0.0067	0.0036	0.0104	0.0058	0.0131	0.0019	0.0049	0.0138
-2	Nonlabor	Veh-Mi	-0.0038	0.1928	0.0039	0.0005	0.0147	0.0041	0.0075	0.0130
176	GENERAL MANAGEMENT									
-1	Labor	Veh-Mi	0.0200	0.3009	0.0134	0.0205	0.0509	0.0523	0.0019	0.0251
-2	Nonlabor	Veh-Mi	0.0087	0.5828	0.0131	0.0003	0.0462	0.0010	0.0364	0.0095
162	CUSTOMER SERVICES									
-1	Labor	Plat-Hr	0.4484	0.6726	0.4944	0.6642	0.3392	0.4307	0.4260	0.8124
-2	Nonlabor	Plat-Hr	0.0559	0.1361	0.1015	0.0420	0.0277	0.1332	0.2322	0.3008
163	PROMOTION									
-1	Labor	Plat-Hr	0.0482	0.2722	0.1293	0.1088	0.2598	0.1467	0.1298	0.1305
-2	Nonlabor	Plat-Hr	0.2180	0.6310	0.4139	0.0092	1.0698	0.5342	0.2503	0.2361
164	MARKET RESEARCH									
-1	Labor	Plat-Hr	0.0159	0.0570	0.1300	0.2682		0.0478	0.5329	0.1030
-2	Nonlabor	Plat-Hr	0.0190	0.0190	0.0077	0.0083		0.0229	0.0301	0.0042
	Platform Hours		1,532,940	797,945	2,029,220	1,344,454	2,377,444	1,129,501	1,820,294	1,883,531
	Vehicle Miles		18,641,700	671,900	28,346,000	21,115,300	32,558,100	16,807,500	24,842,100	28,292,700
	Fixed Guideway Mile		0	1	15	11	41	0	17	12
	Passengers		73,346,100	118,300	70,772,200	41,117,100	71,183,100	37,699,700	47,751,700	50,671,500
	Peak Vehicles		432	249	813	534	654	399	577	604

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
170	DATA PROCESSING					
-1	Labor	Veh-Mi	0.0377	0.0472	0.0100	0.5285
-2	Nonlabor	Veh-Mi	0.0143	0.0205	0.0019	0.1637
171	FINANCE/ACCOUNTING					
-1	Labor	Veh-Mi	0.0291	0.0644	0.0220	0.7359
-2	Nonlabor	Veh-Mi	0.0053	0.0017	0.0004	0.0951
172	PURCHASING/STORES					
-1	Labor	Veh-Mi	0.0529	0.0776	0.0182	0.9365
-2	Nonlabor	Veh-Mi	0.0051	0.0000	-0.0124	0.0198
173	GENERAL ENGINEERING					
-1	Labor	Veh-Mi		0.0162	0.0043	0.1224
-2	Nonlabor	Veh-Mi		0.0004	-0.1426	0.0005
174	REAL ESTATE MANAGEMENT					
-1	Labor	Veh-Mi			0.0001	0.0022
-2	Nonlabor	Veh-Mi			-0.0001	0.0034
175	OFFICE MANAGEMENT & SERVICES					
-1	Labor	Veh-Mi		0.0383	0.0019	0.0383
-2	Nonlabor	Veh-Mi		0.0205	-0.0038	0.1928
176	GENERAL MANAGEMENT					
-1	Labor	Veh-Mi	0.1114	0.0454	0.0019	0.3009
-2	Nonlabor	Veh-Mi	0.0306	0.0042	0.0003	0.5828
162	CUSTOMER SERVICES					
-1	Labor	Plat-Hr	0.3798	0.6843	0.3392	0.8124
-2	Nonlabor	Plat-Hr	0.0203	0.0034	0.0034	0.3008
163	PROMOTION					
-1	Labor	Plat-Hr	0.1250	0.3782	0.0482	0.3782
-2	Nonlabor	Plat-Hr	0.2059	0.4607	0.0092	1.0698
164	MARKET RESEARCH					
-1	Labor	Plat-Hr		0.6529	0.0159	0.6529
-2	Nonlabor	Plat-Hr		0.0314	0.0042	0.0314

Platform Hours	2,226,301	1,155,276
Vehicle Miles	31,309,800	17,286,400
Fixed Guideway Mile	1	0
Passengers	60,277,400	30,319,300
Peak Vehicles	672	332

O & M COST DATA BASE
 STRATUM 3
 1987 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	Dallas 6004	Houston 6008	San Antonio 6011	Bi State 7006	Denver 8006
177	PLANNING									
-1	Labor	Plat-Hr	0.0241	0.1386				0.1888	0.1452	0.1973
-2	Nonlabor	Plat-Hr	0.0040				0.2580	0.0214		0.0282
181	GENERAL FUNCTION									
-1	Labor	Veh-Mi								
-2	Nonlabor	Veh-Mi	0.0997	2.0166	0.0600	0.0513	-0.0822	0.0559	0.1485	0.0118
		Platform Hours	1,532,940	797,945	2,029,220	1,344,454	2,377,444	1,129,501	1,820,294	1,883,531
		Vehicle Miles	18,641,700	671,900	28,346,000	21,115,300	32,558,100	16,807,500	24,842,100	28,292,700
		Fixed Guideway Mile	0	1	15	11	41	0	17	12
		Passengers	73,346,100	118,300	70,772,200	41,117,100	71,183,100	37,699,700	47,751,700	50,671,500
		Peak Vehicles	432	249	813	534	654	399	577	604

O & M COST DATA BASE
STRATUM 3
1987 MOTOR BUS
LEVEL A DETAIL
COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	AC Transit 9014	Orange County 9036	MINIMUM	MAXIMUM
177	PLANNING					
-1	Labor	Plat-Hr	0.1801	0.1777	0.0241	0.1973
-2	Nonlabor	Plat-Hr	0.1058	0.0037	0.0037	0.2580
181	GENERAL FUNCTION					
-1	Labor	Veh-Mi				
-2	Nonlabor	Veh-Mi	0.0946	0.1158	-0.0822	2.0166

Platform Hours	2,226,301	1,155,276
Vehicle Miles	31,309,800	17,286,400
Fixed Guideway Mile	1	0
Passengers	60,277,400	30,319,300
Peak Vehicles	672	332

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014
011	VEHICLE OPERATIONS								
-1	TRANSPORTATION ADMIN								
-2	Labor	Plat-Hr	\$0.4967	\$0.9229	\$0.5561	\$0.5864	\$0.9804	\$0.2967	\$0.3756
-2	Nonlabor	Plat-Hr	0.0510	0.0028	0.0057	0.0303	0.0148	0.0601	0.0135
012	VEHICLE MOVEMENT CONTROL								
-1	Labor	Plat-Hr	1.4985	1.7258	1.5268	0.7046		1.8226	2.1662
-2	Nonlabor	Plat-Hr	0.0019		0.0004				0.0231
021	SCHEDULING								
-1	Labor	Plat-Hr	0.3877	0.3242	0.2257	0.3348	0.1940	0.5104	0.3014
-2	Contract Service	Plat-Hr	0.0012	0.0183	0.0021			0.0004	0.0031
-3	Other Nonlabor	Plat-Hr	0.0101					0.0191	0.0098
031	REVENUE VEHICLE OPERATIONS								
-1	Operators	Plat-Hr	21.8488	23.3029	25.4581	15.9176	21.0333	21.9412	27.1074
-2	Fuel & Lube	Veh-Mi	0.1613	0.1437	0.1593	0.1482	0.1499	0.1279	0.1469
-3	Tires & Tubes	Veh-Mi	0.0038	0.0410	0.0237	0.0254	0.0277	0.0387	0.0399
-4	Electricity	Veh-Mi							
-5	Other Labor	Plat-Hr					2.4711		0.0355
-6	Other Nonlabor	Plat-Hr	0.0744	0.5576		0.5865	0.0029		0.0787
	Platform Hours		1,539,913	786,048	1,985,672	1,144,495	1,795,113	1,846,141	2,163,930
	Vehicle Miles		18,837,100	10,997,700	27,382,100	17,022,800	25,071,800	27,895,600	29,423,900
	Fixed Guideway Mile		0	1	16	0	19	13	1
	Passengers		73,289,400	27,526,000	71,233,100	37,523,800	45,089,000	51,240,600	57,224,100
	Peak Vehicles		419	251	818	415	570	600	637

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Orange County 9036	MINIMUM	MAXIMUM
011	VEHICLE OPERATIONS				
-1	TRANSPORTATION ADMIN				
-2	Labor	Plat-Hr	\$0.9730	\$0.2967	\$0.9804
-2	Nonlabor	Plat-Hr	0.0144	0.0028	0.0601
012	VEHICLE MOVEMENT CONTROL				
-1	Labor	Plat-Hr	2.2985	0.7046	2.2985
-2	Nonlabor	Plat-Hr		0.0004	0.0231
021	SCHEDULING				
-1	Labor	Plat-Hr	0.5073	0.1940	0.5104
-2	Contract Service	Plat-Hr		0.0004	0.0183
-3	Other Nonlabor	Plat-Hr		0.0098	0.0191
031	REVENUE VEHICLE OPERATIONS				
-1	Operators	Plat-Hr	24.7121	15.9176	27.1074
-2	Fuel & Lube	Veh-Mi	0.1642	0.1279	0.1642
-3	Tires & Tubes	Veh-Mi	0.0535	0.0038	0.0535
-4	Electricity	Veh-Mi			
-5	Other Labor	Plat-Hr	0.2507	0.0355	2.4711
-6	Other Nonlabor	Plat-Hr	0.1605	0.0029	0.5865

Platform Hours 1,180,949
 Vehicle Miles 18,066,400
 Fixed Guideway Mile 0
 Passengers 33,446,800
 Peak Vehicles 329

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014
041	VEHICLE MAINTENANCE								
-1	MAINTENANCE ADMINISTRATION								
-2	Labor	Veh-Mi	0.1337	0.0888	0.0255	0.0381	0.0153	0.0554	0.0309
-2	Nonlabor	Veh-Mi	0.0038	0.0006	0.0006		0.0018	-0.0013	0.0058
051	SERVICING REVENUE VEHICLES;								
061	INSPECTION & MAINTENANCE;								
062	ACCIDENT REPAIRS;								
071	VANDALISM REPAIRS								
-1	Labor	Veh-Mi	0.4258	0.5902	0.5774	0.2555	0.3982	0.4768	0.4591
-2	Contract Service	Veh-Mi	0.0006	0.0041	0.0006		0.0004	0.0089	0.0083
-3	Parts	Veh-Mi	0.1895	0.1886	0.1296	0.1197	0.2103	0.2415	0.1608
-4	Other Nonlabor	Veh-Mi	-0.0038				0.0002		0.0004
081	SERVICING SERVICE VEHICLES;								
091	INSPECTION & MAINTENANCE								
-1	Labor	Veh-Mi	0.0055	0.0006	0.0006	0.0026	0.0019	0.0207	
-2	Contract Service	Veh-Mi	0.0001				0.0007	0.0003	0.0001
-3	Fuel/Lube Service Vehicles	Veh-Mi		0.0012	0.0021	0.0019	0.0046	0.0019	0.0026
-4	Tires/Tubes Service Vehicles	Veh-Mi		0.0005	0.0002	0.0002	0.0006	0.0006	
-5	Parts	Veh-Mi	0.0029	0.0013	0.0024	0.0007	0.0039	0.0038	0.0013
-6	Other Nonlabor	Veh-Mi	0.0003	0.0003		0.0002			0.0002
	Platform Hours		1,539,913	786,048	1,985,672	1,144,495	1,795,113	1,846,141	2,163,930
	Vehicle Miles		18,837,100	10,997,700	27,382,100	17,022,800	25,071,800	27,895,600	29,423,900
	Fixed Guideway Mile		0	1	16	0	19	13	1
	Passengers		73,289,400	27,526,000	71,233,100	37,523,800	45,089,000	51,240,600	57,224,100
	Peak Vehicles		419	251	818	415	570	600	637

**O & M COST DATA BASE
STRATUM 3
1988 MOTOR BUS
LEVEL A DETAIL
COST PER UNIT OF SERVICE**

ACCOUNT	DESCRIPTION	VARIABLE	Orange County 9036	MINIMUM	MAXIMUM
041	VEHICLE MAINTENANCE				
-1	MAINTENANCE ADMINISTRATION				
-2	Labor	Veh-Mi	0.1455	0.0153	0.1455
051	Nonlabor	Veh-Mi		-0.0013	0.0058
061	SERVICING REVENUE VEHICLES;				
062	INSPECTION & MAINTENANCE;				
071	ACCIDENT REPAIRS;				
-1	VANDALISM REPAIRS				
-2	Labor	Veh-Mi	0.3437	0.2555	0.5902
-3	Contract Service	Veh-Mi	0.0270	0.0004	0.0270
-4	Parts	Veh-Mi	0.2204	0.1197	0.2415
081	Other Nonlabor	Veh-Mi		-0.0038	0.0004
091	SERVICING SERVICE VEHICLES;				
-1	INSPECTION & MAINTENANCE				
-2	Labor	Veh-Mi	0.0092	0.0006	0.0207
-3	Contract Service	Veh-Mi	0.0026	0.0001	0.0026
-4	Fuel/Lube Service Vehicles	Veh-Mi	0.0039	0.0012	0.0046
-5	Tires/Tubes Service Vehicles	Veh-Mi	0.0001	0.0001	0.0006
-6	Parts	Veh-Mi	0.0024	0.0007	0.0039
	Other Nonlabor	Veh-Mi	0.0002	0.0002	0.0003

Platform Hours	1,180,949
Vehicle Miles	18,066,400
Fixed Guideway Mile	0
Passengers	33,446,800
Peak Vehicles	329

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014																																								
042	NON-VEHICLE MAINTENANCE																																																
-1	MAINTENANCE ADMINISTRATION																																																
-2	Labor	Veh-Mi	0.0053	0.0092	0.0026	0.0015	0.0190	0.0425																																									
-2	Nonlabor	Veh-Mi	0.0002	0.0003	0.0001		0.0009	0.0307																																									
101	MOVEMENT CONTROL																																																
-1	Labor	Veh-Mi			0.0072			0.0044	0.0138																																								
-2	Contract Service	Veh-Mi	0.0040		0.0001	0.0002		0.0001	0.0002																																								
-3	Parts	Veh-Mi			0.0018		0.0007	0.0005	0.0038																																								
-4	Other Nonlabor	Veh-Mi						0.0001																																									
111	FARE COLLECTION/COUNTING																																																
-1	Labor	Pk-Veh	183	393		43	718	294	853																																								
-2	Contract Service	Pk-Veh	4		10	4	4	4																																									
-3	Parts	Pk-Veh	51	24	30	1	51	22																																									
-4	Other Nonlabor	Pk-Veh						3																																									
126	COMMUNICATION SYSTEMS																																																
-1	Labor	Pk-Veh						152																																									
-2	Contract Service	Pk-Veh	11				4																																										
-3	Parts	Pk-Veh					4	57																																									
-4	Other Nonlabor	Pk-Veh	79																																														
121	ROADWAY/TRACK																																																
-1	Labor	FG Rte-Mi					1540																																										
-2	Contract Service	FG Rte-Mi					76																																										
-3	Parts	FG Rte-Mi					1775																																										
-4	Other Nonlabor	FG Rte-Mi																																															
122	STRUCTURES/TUNNEL/SUBWAY																																																
-1	Labor	FG Rte-Mi																																															
-2	Contract Service	FG Rte-Mi																																															
-3	Parts	FG Rte-Mi																																															
-4	Other Nonlabor	FG Rte-Mi																																															
<table border="0" style="width: 100%;"> <tr> <td>Platform Hours</td> <td>1,539,913</td> <td>786,048</td> <td>1,985,672</td> <td>1,144,495</td> <td>1,795,113</td> <td>1,846,141</td> <td>2,163,930</td> </tr> <tr> <td>Vehicle Miles</td> <td>18,837,100</td> <td>10,997,700</td> <td>27,382,100</td> <td>17,022,800</td> <td>25,071,800</td> <td>27,895,600</td> <td>29,423,900</td> </tr> <tr> <td>Fixed Guideway Mile</td> <td>0</td> <td>1</td> <td>16</td> <td>0</td> <td>19</td> <td>13</td> <td>1</td> </tr> <tr> <td>Passengers</td> <td>73,289,400</td> <td>27,526,000</td> <td>71,233,100</td> <td>37,523,800</td> <td>45,089,000</td> <td>51,240,600</td> <td>57,224,100</td> </tr> <tr> <td>Peak Vehicles</td> <td>419</td> <td>251</td> <td>818</td> <td>415</td> <td>570</td> <td>600</td> <td>637</td> </tr> </table>										Platform Hours	1,539,913	786,048	1,985,672	1,144,495	1,795,113	1,846,141	2,163,930	Vehicle Miles	18,837,100	10,997,700	27,382,100	17,022,800	25,071,800	27,895,600	29,423,900	Fixed Guideway Mile	0	1	16	0	19	13	1	Passengers	73,289,400	27,526,000	71,233,100	37,523,800	45,089,000	51,240,600	57,224,100	Peak Vehicles	419	251	818	415	570	600	637
Platform Hours	1,539,913	786,048	1,985,672	1,144,495	1,795,113	1,846,141	2,163,930																																										
Vehicle Miles	18,837,100	10,997,700	27,382,100	17,022,800	25,071,800	27,895,600	29,423,900																																										
Fixed Guideway Mile	0	1	16	0	19	13	1																																										
Passengers	73,289,400	27,526,000	71,233,100	37,523,800	45,089,000	51,240,600	57,224,100																																										
Peak Vehicles	419	251	818	415	570	600	637																																										

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Orange County 9036	MINIMUM	MAXIMUM
042	NON-VEHICLE MAINTENANCE				
-1	Maintenance Administration	Veh-Mi	0.0090	0.0015	0.0425
-2	Labor	Veh-Mi		0.0001	0.0307
101	MOVEMENT CONTROL				
-1	Labor	Veh-Mi	0.0068	0.0044	0.0138
-2	Contract Service	Veh-Mi	0.0044	0.0001	0.0044
-3	Parts	Veh-Mi	0.0005	0.0005	0.0038
-4	Other Nonlabor	Veh-Mi		0.0001	0.0001
111	FARE COLLECTION/COUNTING				
-1	Labor	Pk-Veh	436	43	853
-2	Contract Service	Pk-Veh	1	1	10
-3	Parts	Pk-Veh	12	1	51
-4	Other Nonlabor	Pk-Veh		3	3
126	COMMUNICATION SYSTEMS				
-1	Labor	Pk-Veh	78	78	152
-2	Contract Service	Pk-Veh	705	4	705
-3	Parts	Pk-Veh	17	4	57
-4	Other Nonlabor	Pk-Veh		79	79
121	ROADWAY/TRACK				
-1	Labor	FG Rte-Mi		1540	1540
-2	Contract Service	FG Rte-Mi		76	76
-3	Parts	FG Rte-Mi		1775	1775
-4	Other Nonlabor	FG Rte-Mi			
122	STRUCTURES/TUNNEL/SUBWAY				
-1	Labor	FG Rte-Mi			
-2	Contract Service	FG Rte-Mi			
-3	Parts	FG Rte-Mi			
-4	Other Nonlabor	FG Rte-Mi			

Platform Hours 1,180,949
 Vehicle Miles 18,066,400
 Fixed Guideway Mile 0
 Passengers 33,446,800
 Peak Vehicles 329

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014
123	PASSENGER STATIONS:								
124	OPERATING STAT BLDG GROUNDS EQUIP:								
125	GARAGE/SHOP BLDG:								
127	GENERAL ADMIN BLDG GROUNDS EQUIP:								
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP:								
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP								
-1	Labor	Pk-Veh	2856	3572	2414	2298	1956	3354	2051
-2	Contract Service	Pk-Veh	1187	1062	236	256	1366	1748	913
-3	Parts	Pk-Veh	1830	581	435	1144	1454	831	410
-4	Other Nonlabor	Pk-Veh	1					3216	7
141	OPERATION/MAINT POWER FACILITIES								
-1	Labor	Veh-Mi							
-2	Contract Service	Veh-Mi							
-3	Parts	Veh-Mi							
-4	Other Nonlabor	Veh-Mi							
		Platform Hours	1,539,913	786,048	1,985,672	1,144,495	1,795,113	1,846,141	2,163,930
		Vehicle Miles	18,837,100	10,997,700	27,382,100	17,022,800	25,071,800	27,895,600	29,423,900
		Fixed Guideway Mile	0	1	16	0	19	13	1
		Passengers	73,289,400	27,526,000	71,233,100	37,523,800	45,089,000	51,240,600	57,224,100
		Peak Vehicles	419	251	818	415	570	600	637

**O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE**

ACCOUNT	DESCRIPTION	VARIABLE	Orange County 9036	MINIMUM	MAXIMUM
123	PASSENGER STATIONS;				
124	OPERATING STAT BLDG GROUNDS EQUIP;				
125	GARAGE/SHOP BLDG;				
127	GENERAL ADMIN BLDG GROUNDS EQUIP;				
128	ACCIDENT REPAIRS BLDG GROUNDS EQUIP;				
131	VANDALISM REPAIRS BLDG GROUNDS EQUIP				
-1	Labor	Pk-Veh	2010	1956	3572
-2	Contract Service	Pk-Veh	2236	236	2236
-3	Parts	Pk-Veh	205	205	1454
-4	Other Nonlabor	Pk-Veh		1	3216
141	OPERATION/MAINT POWER FACILITIES				
-1	Labor	Veh-Mi			
-2	Contract Service	Veh-Mi			
-3	Parts	Veh-Mi			
-4	Other Nonlabor	Veh-Mi			

Platform Hours 1,180,949
 Vehicle Miles 18,066,400
 Fixed Guideway Mile 0
 Passengers 33,446,800
 Peak Vehicles 329

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	Sorta 5012	Minneapolis 5027	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014
145	GENERAL ADMINISTRATION								
-1	PRELIMINARY TRANSIT SYSTEM DEVELOP	Veh-Mi						0.0108	
-2	Labor	Veh-Mi						0.0062	
151	TICKETING/FARE COLLECTION								
-1	Labor	Passengers	0.0069	0.0061	0.0146	0.0050	0.0041	0.0152	0.0123
-2	Supplies	Passengers	0.0010	0.0001	0.0022	0.0017	0.0051	0.0025	0.0045
-3	Other Nonlabor	Passengers	0.0044	0.0006		0.0002	0.0086	0.0019	0.0059
161	SYSTEM SECURITY								
-1	Labor	Veh-Mi	0.0061	0.0017	0.0178	0.0034	0.0032	0.0015	0.0024
-2	Contract Service	Veh-Mi	0.0019	0.0017	0.0076		0.0461	0.0042	0.0546
-3	Other Nonlabor	Veh-Mi	0.0001		0.0012				0.0001
165	INJURIES/DAMAGES								
-1	Labor	Veh-Mi	0.0217	0.0248	0.0197	0.0038	0.0138	0.0125	0.0063
-2	Claims	Veh-Mi	0.0210	0.0222	0.0123	0.0204	0.0618	0.0379	0.0651
-3	Other Nonlabor	Veh-Mi	0.0198	0.0114	0.0130	0.0044		0.0032	0.0078
166	SAFETY								
-1	Labor	Veh-Mi	0.0099	0.0058	0.0097	0.0089	0.0138	0.0046	0.0013
-2	Nonlabor	Veh-Mi	0.0002	0.0044		0.0014	0.0002	0.0008	0.0004
167	PERSONNEL								
-1	Labor	Veh-Mi	0.0175	0.0295	0.0236	0.0195	0.0184	0.0351	0.0489
-2	Nonlabor	Veh-Mi	0.0048	0.0082	0.0098	0.0062	0.0103	0.0178	0.0257
168	LEGAL								
-1	Labor	Veh-Mi		0.0177	0.0045	0.0206		0.0077	0.0151
-2	Nonlabor	Veh-Mi						0.0063	0.0100
169	INSURANCE								
-1	Labor	Veh-Mi	0.0003	0.0003	0.0038	0.0027	0.0043	0.0024	0.0094
-2	Insurance	Veh-Mi	0.0054	0.0297			0.0327	0.0035	0.0804
-2	Other Nonlabor	Veh-Mi					0.0279	0.0009	0.0012
	Platform Hours		1,539,913	786,048	1,985,672	1,144,495	1,795,113	1,846,141	2,163,930
	Vehicle Miles		18,837,100	10,997,700	27,382,100	17,022,800	25,071,800	27,895,600	29,423,900
	Fixed Guideway Mile		0	1	16	0	19	13	1
	Passengers		73,289,400	27,526,000	71,233,100	37,523,800	45,089,000	51,240,600	57,224,100
	Peak Vehicles		419	251	818	415	570	600	637

O & M COST DATA BASE
STRATUM 3

1988 MOTOR BUS

LEVEL A DETAIL

COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Orange County 9036	MINIMUM	MAXIMUM
	GENERAL ADMINISTRATION				
145	PRELIMINARY TRANSIT SYSTEM DEVELOP				
-1	Labor	Veh-Mi	0.0187	0.0108	0.0187
-2	Nonlabor	Veh-Mi	0.0051	0.0051	0.0062
151	TICKETING/FARE COLLECTION				
-1	Labor	Passengers	0.0055	0.0041	0.0152
-2	Supplies	Passengers	0.0008	0.0001	0.0051
-3	Other Nonlabor	Passengers		0.0002	0.0086
161	SYSTEM SECURITY				
-1	Labor	Veh-Mi	0.0112	0.0015	0.0178
-2	Contract Service	Veh-Mi	0.0002	0.0002	0.0546
-3	Other Nonlabor	Veh-Mi	0.0004	0.0001	0.0012
165	INJURIES/DAMAGES				
-1	Labor	Veh-Mi	0.0086	0.0038	0.0248
-2	Claims	Veh-Mi	0.0389	0.0123	0.0651
-3	Other Nonlabor	Veh-Mi	0.0145	0.0032	0.0145
166	SAFETY				
-1	Labor	Veh-Mi	0.0028	0.0013	0.0138
-2	Nonlabor	Veh-Mi	0.0007	0.0002	0.0044
167	PERSONNEL				
-1	Labor	Veh-Mi	0.0658	0.0175	0.0658
-2	Nonlabor	Veh-Mi	0.0148	0.0048	0.0257
168	LEGAL				
-1	Labor	Veh-Mi		0.0077	0.0151
-2	Nonlabor	Veh-Mi	0.0228	0.0045	0.0228
169	INSURANCE				
-1	Labor	Veh-Mi		0.0003	0.0094
-2	Insurance	Veh-Mi	0.0077	0.0027	0.0804
-2	Other Nonlabor	Veh-Mi		0.0009	0.0279

Platform Hours	1,180,949
Vehicle Miles	18,066,400
Fixed Guideway Mile	0
Passengers	33,446,800
Peak Vehicles	329

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014
170	DATA PROCESSING								
-1	Labor	Veh-Mi	0.0172	0.0302	0.0232	0.0129	0.0360	0.0315	0.0365
-2	Nonlabor	Veh-Mi	0.0082	0.0099	0.0148	0.0048	0.0154	0.0221	0.0123
171	FINANCE/ACCOUNTING								
-1	Labor	Veh-Mi	0.0395	0.0519	0.0605	0.0235	0.0511	0.0580	0.0367
-2	Nonlabor	Veh-Mi	0.0046	0.0057	0.0028	0.0019	0.0013	0.0060	0.0144
172	PURCHASING/STORES								
-1	Labor	Veh-Mi	0.0470	0.0615	0.0428	0.0188	0.0703	0.0763	0.0601
-2	Nonlabor	Veh-Mi	0.0012	0.0045			0.0040	0.0029	0.0093
173	GENERAL ENGINEERING								
-1	Labor	Veh-Mi			0.0040		0.0038	0.0406	
-2	Nonlabor	Veh-Mi			0.0000	0.0005	0.0004	-0.0148	
174	REAL ESTATE MANAGEMENT								
-1	Labor	Veh-Mi						0.0020	
-2	Nonlabor	Veh-Mi			0.0011	0.0055	0.0024	0.0024	
175	OFFICE MANAGEMENT & SERVICES								
-1	Labor	Veh-Mi	0.0078		0.0090	0.0017	0.0071	0.0163	
-2	Nonlabor	Veh-Mi	-0.0052	0.0164	0.0034	0.0041	0.0063	0.0112	
176	GENERAL MANAGEMENT								
-1	Labor	Veh-Mi	0.0205	0.0197	0.0146	0.0641	0.0044	0.0232	0.1457
-2	Nonlabor	Veh-Mi	0.0088	0.0351	0.0128	0.0003	0.0277	0.0064	0.0429
162	CUSTOMER SERVICES								
-1	Labor	Plat-Hr	0.4578	0.8931	0.4672	0.3995	0.4269	0.7742	0.3738
-2	Nonlabor	Plat-Hr	0.0818	0.0770	0.1798	0.1325	0.0768	0.3275	0.0017
163	PROMOTION								
-1	Labor	Plat-Hr	0.0497	0.2666	0.1449	0.1610	0.1363	0.1766	0.1536
-2	Nonlabor	Plat-Hr	0.2478	0.8452	0.4892	0.4046	0.3516	0.1528	0.0990
164	MARKET RESEARCH								
-1	Labor	Plat-Hr	0.0130	0.0649	0.1414	0.0464	0.4681	0.0463	
-2	Nonlabor	Plat-Hr	0.0116		0.0064	0.0240	0.0283	0.0378	
	Platform Hours		1,539,913	786,048	1,985,672	1,144,495	1,795,113	1,846,141	2,163,930
	Vehicle Miles		18,837,100	10,997,700	27,382,100	17,022,800	25,071,800	27,895,600	29,423,900
	Fixed Guideway Mile		0	1	16	0	19	13	1
	Passengers		73,289,400	27,526,000	71,233,100	37,523,800	45,089,000	51,240,600	57,224,100
	Peak Vehicles		419	251	818	415	570	600	637

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Orange County 9036	MINIMUM	MAXIMUM
170	DATA PROCESSING				
-1	Labor	Veh-Mi	0.0519	0.0129	0.0519
-2	Nonlabor	Veh-Mi	0.0217	0.0048	0.0221
171	FINANCE/ACCOUNTING				
-1	Labor	Veh-Mi	0.0547	0.0235	0.0605
-2	Nonlabor	Veh-Mi	0.0017	0.0013	0.0144
172	PURCHASING/STORES				
-1	Labor	Veh-Mi	0.0792	0.0198	0.0792
-2	Nonlabor	Veh-Mi	0.0023	0.0012	0.0093
173	GENERAL ENGINEERING				
-1	Labor	Veh-Mi	0.0173	0.0038	0.0406
-2	Nonlabor	Veh-Mi	0.0008	-0.0148	0.0008
174	REAL ESTATE MANAGEMENT				
-1	Labor	Veh-Mi		0.0020	0.0020
-2	Nonlabor	Veh-Mi		0.0011	0.0055
175	OFFICE MANAGEMENT & SERVICES				
-1	Labor	Veh-Mi	0.0377	0.0017	0.0377
-2	Nonlabor	Veh-Mi	0.0296	-0.0052	0.0296
176	GENERAL MANAGEMENT				
-1	Labor	Veh-Mi	0.0454	0.0044	0.1457
-2	Nonlabor	Veh-Mi	0.0057	0.0003	0.0429
162	CUSTOMER SERVICES				
-1	Labor	Plat-Hr	0.6494	0.3738	0.8931
-2	Nonlabor	Plat-Hr	0.0135	0.0017	0.3275
163	PROMOTION				
-1	Labor	Plat-Hr	0.4018	0.0497	0.4018
-2	Nonlabor	Plat-Hr	0.5987	0.0990	0.8452
164	MARKET RESEARCH				
-1	Labor	Plat-Hr	0.6932	0.0130	0.6932
-2	Nonlabor	Plat-Hr	0.0571	0.0064	0.0571

Platform Hours 1,180,949
 Vehicle Miles 18,066,400
 Fixed Guideway Mile 0
 Passengers 33,446,800
 Peak Vehicles 329

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Milwaukee 5008	SORTA 5012	Minneapolis 5027	San Antonio 6011	Bi State 7006	Denver 8006	AC Transit 9014
177	PLANNING								
-1	Labor	Plat-Hr	0.0424	0.1580		0.1711	0.0830	0.2807	0.1753
-2	Nonlabor	Plat-Hr	0.0022	0.0069		0.0060		0.0127	0.0756
181	GENERAL FUNCTION								
-1	Labor	Veh-Mi						0.0049	
-2	Nonlabor	Veh-Mi	0.1107	0.1088	0.0754	0.0535	0.1816	0.0291	0.0977
		Platform Hours	1,539,913	786,048	1,985,672	1,144,495	1,795,113	1,846,141	2,163,930
		Vehicle Miles	18,837,100	10,997,700	27,382,100	17,022,800	25,071,800	27,895,600	29,423,900
		Fixed Guideway Mile	0	1	16	0	19	13	1
		Passengers	73,289,400	27,526,000	71,233,100	37,523,800	45,089,000	51,240,600	57,224,100
		Peak Vehicles	419	251	818	415	570	600	637

O & M COST DATA BASE
 STRATUM 3
 1988 MOTOR BUS
 LEVEL A DETAIL
 COST PER UNIT OF SERVICE

ACCOUNT	DESCRIPTION	VARIABLE	Orange County 9036	MINIMUM	MAXIMUM
177	PLANNING				
-1	Labor	Plat-Hr	0.2244	0.0424	0.2807
-2	Nonlabor	Plat-Hr	0.0005	0.0005	0.0756
181	GENERAL FUNCTION				
-1	Labor	Veh-Mi		0.0049	0.0049
-2	Nonlabor	Veh-Mi	0.1012	0.0291	0.1816

Platform Hours 1,180,949
 Vehicle Miles 18,066,400
 Fixed Guideway Mile 0
 Passengers 33,446,800
 Peak Vehicles 329

Stratum 4
Rail Rapid

**O & M COST DATA BASE
STRATUM 4
1986 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	1003 MBTA	2008 NYCTA	2075 Patco	2098 PATH	3019 SEPTA	3030 WMATA	3034 Baltimore MTA	4022 MARTA
VEHICLE OPERATIONS								
Platforms Hours/Transportation Admin. Personnel	17,653	92,186	5,497	16,091	5,810	3,358	1,743	7,798
Platforms Hours/Revenue Vehicle Operation Personnel	1,712	2,423	1,665	4,542	1,335	1,525	2,769	2,894
Platform Hours/Transportation Support Personnel	4,713	17,287	6,222	4,746	930	1,450	810	5,808
Transportation Admin./Other Personnel	274.7%	467.7%	69.7%	173.2%	256.5%	112.9%	48.7%	89.6%
VEHICLE MAINTENANCE								
Vehicle Miles/Admin. Personnel	154,442	271,345	429,901	730,688	122,561	372,356	91,959	715,088
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	85,560	97,761	66,759	57,733	49,408	57,771	52,395	159,116
Vehicle Miles/Support Personnel	105,955	209,658	252,394	389,700	188,219	367,457	154,051	552,568
Admin./Other Personnel	80.6%	88.3%	134.7%	163.3%	51.6%	87.6%	44.5%	100.5%
NON-VEHICLE MAINTENANCE								
Route Miles/Admin. Personnel	0.69	0.33	2.05	0.59	1.54	0.77	0.44	0.79
Route Miles/Support Personnel	0.13	0.06	0.41	0.08	0.21	0.15	0.16	0.20
Admin./Other Personnel	524.3%	550.0%	504.0%	717.0%	730.7%	504.3%	268.0%	393.8%
GENERAL ADMINISTRATION								
Vehicle Miles/Marketing and Planning Personnel	959,168	1,957,766	3,912,100	142,573	664,303	346,056	182,061	480,494
Vehicle Miles/General Admin. Support Personnel	32,028	28,911	47,477	64,060	75,684	50,693	23,227	130,575
General Admin./Other Functional Personnel	267.9%	287.6%	519.3%	17.2%	200.9%	49.4%	67.6%	42.3%

O & M COST DATA BASE
STRATUM 4
1986 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON

	4034 Miami	5015 Cleveland RTA	5066 CTA	9003 BART	MINIMUM	MAXIMUM
VEHICLE OPERATIONS						
Platforms Hours/Transportation Admin. Personnel	2,341	4,599	7,450	5,760	1,743	92,186
Platforms Hours/Revenue Vehicle Operation Personnel	1,152	1,018	1,672	1,088	1,018	4,542
Platform Hours/Transportation Support Personnel	1,676	65,732	1,306	8,414	810	65,732
Transportation Admin./Other Personnel	82.8%	6.9%	250.1%	60.6%	6.9%	467.7%
VEHICLE MAINTENANCE						
Vehicle Miles/Admin. Personnel	183,720	195,857	335,711	479,929	91,959	730,688
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	99,848	5,457	118,138	102,200	5,457	159,116
Vehicle Miles/Support Personnel	183,720	228,500	319,245	1,050,655	105,955	1,050,655
Admin./Other Personnel	64.8%	83.7%	76.8%	41.6%	41.6%	163.3%
NON-VEHICLE MAINTENANCE						
Route Miles/Admin. Personnel	1.06	3.44		2.72	0.33	3.44
Route Miles/Support Personnel	0.42	0.55	0.22	0.33	0.06	0.55
Admin./Other Personnel	253.7%	627.9%		825.5%	253.7%	825.5%
GENERAL ADMINISTRATION						
Vehicle Miles/Marketing and Planning Personnel	510,333	99,709	11,158,381	1,147,579	99,709	11,158,381
Vehicle Miles/General Admin. Support Personnel	19,797	158,957	174,091	70,971	19,797	174,091
General Admin./Other Functional Personnel	112.2%	51.6%	1446.3%	73.9%	17.2%	1446.3%

**O & M COST DATA BASE
STRATUM 4
1987 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	1003 MBTA	2008 NYCTA	2075 Patco	2098 PATH	3019 SEPTA	3030 WMATA	3034 Baltimore MTA	4022 MARTA	4034 Miami
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	16,594	85,941	5,707	19,163	6,404	4,259	1,488	1,838	5,079
Platforms Hours/Revenue Vehicle Operation Personnel	1,844	2,476	1,682	4,121	1,548	1,903	1,980	956	1,425
Platform Hours/Transportation Support Personnel	4,610	17,035	5,510	3,484	1,057	1,850	969	1,277	2,215
Transportation Admin./Other Personnel	257.1%	440.5%	79.3%	252.0%	245.8%	113.5%	50.5%	82.3%	139.5%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	161,419	263,795	440,568	617,500	130,881	275,144	89,039	697,211	225,231
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	88,047	107,444	71,315	63,419	70,562	64,531	59,960	236,788	47,837
Vehicle Miles/Support Personnel	112,618	184,150	281,214	510,109	184,423	486,357	148,186	464,807	200,206
Admin./Other Personnel	80.4%	90.5%	125.0%	107.7%	51.3%	49.9%	42.8%	99.4%	90.8%
NON-VEHICLE MAINTENANCE									
Route Miles/Admin. Personnel	0.53	0.11	0.91	0.43	1.14	0.85	0.80	1.11	0.74
Route Miles/Support Personnel	0.10	0.02	0.18	0.15	0.17	0.16	0.28	0.31	0.18
Admin./Other Personnel	530.7%	472.4%	494.2%	280.9%	662.1%	540.7%	288.4%	353.7%	413.6%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	968,515.00	2,201,712.15	3,965,114.00	378,467.74	699,535.30	391,387.76	197,581.81	1,792,827.14	112,615.74
Vehicle Miles/General Admin. Support Personnel	33,570.71	30,450.54	48,473.28	74,729.30	81,390.27	53,898.74	19,498.20	97,285.19	36,441.95
General Admin./Other Functional Personnel	260.2%	337.8%	498.0%	37.2%	197.8%	53.4%	72.0%	134.7%	30.9%

O & M COST DATA BASE
STRATUM 4

1987 RAIL RAPID
LEVEL R FUNCTIONS

UNIT OF SERVICE PER PERSON

	5015 Cleveland RTA	5066 CTA	9003 BART	MINIMUM	MAXIMUM
VEHICLE OPERATIONS					
Platforms Hours/Transportation Admin. Personnel	10,405	7,440	1,716	1,488	85,941
Platforms Hours/Revenue Vehicle Operation Personnel	1,955	1,725	1,849	956	4,121
Platform Hours/Transportation Support Personnel	5,341	1,319	8,080	969	17,035
Transportation Admin./Other Personnel	142.6%	244.4%	17.3%	17.3%	440.5%
VEHICLE MAINTENANCE					
Vehicle Miles/Admin. Personnel	236,332	351,071	642,099	89,039	697,211
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	68,684	113,579	103,260	47,837	236,788
Vehicle Miles/Support Personnel	66,603	283,034	607,972	66,603	607,972
Admin./Other Personnel	174.7%	88.5%	90.3%	42.8%	174.7%
NON-VEHICLE MAINTENANCE					
Route Miles/Admin. Personnel	1.88		6.86	0.11	6.86
Route Miles/Support Personnel	0.11	0.25	0.53	0.02	0.53
Admin./Other Personnel	1662.7%		1288.8%	280.9%	1662.7%
GENERAL ADMINISTRATION					
Vehicle Miles/Marketing and Planning Personnel	293,052.00	10,098,902.77	1,211,174.98	112,615.74	10,098,903
Vehicle Miles/General Admin. Support Personnel	35,335.85	164,579.90	68,118.58	19,498.20	164,580
General Admin./Other Functional Personnel	84.3%	1353.7%	93.7%	30.9%	1353.7%

**O & M COST DATA BASE
STRATUM 4
1988 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	1003 MBTA	2008 NYCTA	2075 Patco	2098 PATH	3019 SEPTA	3030 WMATA	3034 Baltimore MTA	4022 MARTA	4034 Miami
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	13,804	84,736	5,963	22,140	6,064	4,156	1,979	1,722	3,694
Platforms Hours/Revenue Vehicle Operation Personnel	1,726	3,265	1,675	4,761	1,505	1,576	1,874	1,461	2,166
Platform Hours/Transportation Support Personnel	4,729	17,548	5,834	4,025	1,064	1,753	1,301	901	2,767
Transportation Admin./Other Personnel	213.9%	407.1%	79.4%	252.0%	236.0%	124.8%	62.3%	72.9%	74.9%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	179,404	279,843	575,789	662,342	230,987	270,835		674,695	220,043
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	77,455	124,137	76,844	68,024	48,647	65,096	99,777	132,293	46,262
Vehicle Miles/Support Personnel	106,012	213,636	292,007	547,152	161,128	457,452	302,678	449,797	367,786
Admin./Other Personnel	97.8%	82.8%	156.1%	107.7%	110.1%	51.8%		115.9%	53.1%
NON-VEHICLE MAINTENANCE									
Route Miles/Admin. Personnel	0.68	0.12	0.81	0.43	1.01	0.78	0.85	2.43	0.98
Route Miles/Support Personnel	0.14	0.03	0.17	0.15	0.19	0.15	0.23	0.88	0.29
Admin./Other Personnel	488.1%	365.7%	473.1%	280.9%	539.3%	502.4%	365.6%	278.3%	336.3%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	999,538	2,960,102	4,088,100	405,952	702,791	390,117	1,156,385	4,497,967	138,414
Vehicle Miles/General Admin. Support Personnel	31,143	36,283	47,758	80,156	81,760	62,606	45,280	107,951	38,483
General Admin./Other Functional Personnel	269.0%	414.3%	431.7%	37.2%	174.6%	56.5%		365.3%	27.5%

O & M COST DATA BASE
STRATUM 4
1988 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON

	5015 Cleveland RTA	5066 CTA	9003 BART	MINIMUM	MAXIMUM
VEHICLE OPERATIONS					
Platforms Hours/Transportation Admin. Personnel	13,086	7,167	1,746	1,722	84,736
Platforms Hours/Revenue Vehicle Operation Personnel	1,875	1,711	1,864	1,461	4,761
Platform Hours/Transportation Support Personnel	4,301	1,257	8,059	901	17,548
Transportation Admin./Other Personnel	211.9%	241.5%	17.6%	17.6%	407.1%
VEHICLE MAINTENANCE					
Vehicle Miles/Admin. Personnel	214,147	405,701	806,215	179,404	806,215
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	69,123	130,920	105,102	46,262	132,293
Vehicle Miles/Support Personnel	428,294	305,051	643,698	106,012	643,698
Admin./Other Personnel	43.1%	93.1%	107.7%	43.1%	156.1%
NON-VEHICLE MAINTENANCE					
Route Miles/Admin. Personnel	0.28		7.40	0.12	7.40
Route Miles/Support Personnel	0.12	0.24	0.52	0.03	0.88
Admin./Other Personnel	237.8%		1423.4%	237.8%	1423.4%
GENERAL ADMINISTRATION					
Vehicle Miles/Marketing and Planning Personnel	299,219	10,149,891	1,380,131	138,414	10,149,891
Vehicle Miles/General Admin. Support Personnel	36,835	166,293	71,412	31,143	166,293
General Admin./Other Functional Personnel	46.0%	1211.1%	92.7%	27.5%	1211.1%

**O & M COST DATA BASE
STRATUM 4
1989 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	1003 MBTA	2008 NYCTA	2075 Patco	2098 PATH	3019 SEPTA	3030 WMATA	3034 Baltimore MTA	4022 MARTA	4034 Miami
VEHICLE OPERATIONS									
Vehicle Hours/Transportation Admin. Personnel	14,877	36,626	11,386	20,268	14,166	9,802	4,800	4,878	6,332
Vehicle Hours/Revenue Vehicle Operation Personnel	1,853	3,709	2,892	2,413	3,574	4,184	4,968	4,163	3,825
Vehicle Hours/Transportation Support Personnel	5,049	17,830	10,329	17,249	2,576	4,140	3,210	2,559	8,547
Transportation Admin./Other Personnel	215.5%	170.0%	86.1%	103.1%	230.4%	117.8%	58.7%	72.6%	51.2%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	186,837	297,081	590,437	747,521	219,101	276,452	140,129	643,278	181,141
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	104,459	143,293	84,179	76,772	47,603	64,877	83,759	127,547	43,066
Vehicle Miles/Support Personnel	109,956	208,108	299,436	617,517	152,321	445,575	257,720	435,159	282,494
Admin./Other Personnel	87.1%	84.5%	153.9%	107.7%	109.6%	54.2%	41.0%	114.3%	55.6%
NON-VEHICLE MAINTENANCE									
Route Miles/Admin. Personnel	0.70	0.27	1.85	0.31	1.03	0.73	0.71	1.29	1.64
Route Miles/Support Personnel	0.15	0.07	0.41	0.11	0.20	0.13	0.22	0.46	0.59
Admin./Other Personnel	458.2%	385.1%	454.7%	288.9%	516.1%	540.7%	327.7%	280.8%	279.4%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	999,170	3,269,977	4,192,100	473,430	631,378	382,994	969,842	462,356	616,351
Vehicle Miles/General Admin. Support Personnel	31,742	39,560	47,800	94,686	78,734	63,952	33,352	129,784	40,185
General Admin./Other Functional Personnel	243.7%	468.3%	424.6%	38.3%	161.6%	55.5%	202.8%	48.6%	125.0%

**O & M COST DATA BASE
STRATUM 4
1989 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	5015 Cleveland RTA	5066 CTA	9003 BART	MINIMUM	MAXIMUM
VEHICLE OPERATIONS					
Vehicle Hours/Transportation Admin. Personnel	7,068	14,970	5,231	4,800	36,626
Vehicle Hours/Revenue Vehicle Operation Personnel	1,625	3,416	5,616	1,625	5,616
Vehicle Hours/Transportation Support Personnel	2,752	2,526	24,365	2,526	24,365
Transportation Admin./Other Personnel	161.5%	251.9%	17.4%	17.4%	251.9%
VEHICLE MAINTENANCE					
Vehicle Miles/Admin. Personnel	207,447	299,772	984,669	140,129	984,669
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	46,349	143,866	101,934	43,066	143,866
Vehicle Miles/Support Personnel	61,754	279,565	741,195	61,754	741,195
Admin./Other Personnel	191.9%	70.8%	116.8%	41.0%	191.9%
NON-VEHICLE MAINTENANCE					
Route Miles/Admin. Personnel	7.80		5.07	0.27	7.80
Route Miles/Support Personnel	0.49	0.23	0.32	0.07	0.59
Admin./Other Personnel	1595.9%		1576.8%	279.4%	1595.9%
GENERAL ADMINISTRATION					
Vehicle Miles/Marketing and Planning Personnel	314,221	9,042,311	1,236,226	314,221	9,042,311
Vehicle Miles/General Admin. Support Personnel	34,352	179,785	77,053	31,742	179,785
General Admin./Other Functional Personnel	106.6%	1239.3%	70.5%	38.3%	1239.3%

Stratum 4
Light Rail

**O & M COST DATA BASE
STRATUM 4
1986 LIGHT RAIL
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	0008 Portland	1003 MBTA	2004 Buffalo	3019 SEPTA	3022 PAT	5015 Cleveland RTA	6032 New Orleans	9013 Santa Clara	9015 MUNI
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	NR	22,580	NR	15,486	21,216	5,950	25,790	NR	15,255
Platforms Hours/Revenue Vehicle Operation Personnel	NR	1,737	NR	1,543	1,816	1,395	1,887	NR	1,756
Platform Hours/Transportation Support Personnel	NR	5,132	NR	78,341	4,532	95,206	19,342	NR	5,672
Transportation Admin./Other Personnel	NR	328.7%	NR	19.4%	334.2%	6.2%	121.5%	NR	205.4%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	NR	59,967	NR	60,915	146,011	828,946	1,451,600	NR	214,053
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	NR	23,997	NR	27,205	66,500	230,950	315,565	NR	18,403
Vehicle Miles/Support Personnel	NR	53,970	NR	136,688	36,503	987,681	604,833	NR	123,242
Admin./Other Personnel	NR	76.9%	NR	37.2%	141.8%	68.0%	157.7%	NR	151.1%
NON-VEHICLE MAINTENANCE									
Route Miles/Admin. Personnel	NR	3.99	NR	1.79	298.00	4.73	2.20	NR	3.14
Route Miles/Support Personnel	NR	0.63	NR	0.44	0.30	0.75	0.44	NR	0.58
Admin./Other Personnel	NR	635.7%	NR	410.0%	99200.0%	629.1%	500.0%	NR	540.0%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	NR	539,700	NR	313,084	839,563	4,220,091	3,629,000	NR	813,400
Vehicle Miles/General Admin. Support Personnel	NR	24,532	NR	35,537	129,163	682,662	1,209,667	NR	116,200
General Admin./Other Functional Personnel	NR	337.1%	NR	108.9%	349.9%	228.0%	200.0%	NR	245.7%

O & M COST DATA BASE
 STRATUM 4
 1986 LIGHT RAIL
 LEVEL R FUNCTIONS
 UNIT OF SERVICE PER PERSON

	9054 S. D. Trolley	MINIMUM	MAXIMUM
VEHICLE OPERATIONS			
Platforms Hours/Transportation Admin. Personnel	6,067	5,950	25,790
Platforms Hours/Revenue Vehicle Operation Personnel	2,482	1,395	2,482
Platform Hours/Transportation Support Personnel	45,500	4,532	95,206
Transportation Admin./Other Personnel	12.6%	6.2%	334.2%
VEHICLE MAINTENANCE			
Vehicle Miles/Admin. Personnel	310,915	59,967	1,451,600
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	136,896	18,403	315,565
Vehicle Miles/Support Personnel	98,096	36,503	987,681
Admin./Other Personnel	132.3%	37.2%	157.7%
NON-VEHICLE MAINTENANCE			
Route Miles/Admin. Personnel	41.00	1.79	298.00
Route Miles/Support Personnel	8.20	0.30	8.20
Admin./Other Personnel	500.0%	410.0%	99200.0%
GENERAL ADMINISTRATION			
Vehicle Miles/Marketing and Planning Personnel		313,084	4,220,091
Vehicle Miles/General Admin. Support Personnel	130,099	24,532	1,209,667
General Admin./Other Functional Personnel	21.7%	21.7%	349.9%

**O & M COST DATA BASE
STRATUM 4
1987 LIGHT RAIL
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	0008 Portland	1003 MBTA	2004 Buffalo	3019 SEPTA	3022 PAT	5015 Cleveland RTA	6032 New Orleans	9013 Santa Clara	9015 MUNI
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	27,422	18,164	NR	9,619	11,784	11,516	51,675	NR	14,965
Platforms Hours/Revenue Vehicle Operation Personnel	1,828	1,946	NR	1,393	945	1,736	1,414	NR	1,814
Platform Hours/Transportation Support Personnel	4,219	6,812	NR	29,314	3,156	4,775	12,632	NR	4,929
Transportation Admin./Other Personnel	453.5%	207.4%	NR	31.3%	287.3%	176.9%	367.9%	NR	221.9%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	552,796	53,796	NR	131,280	95,098	189,370	118,758	NR	169,105
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	52,647	27,588	NR	30,819	25,506	62,054	24,102	NR	19,512
Vehicle Miles/Support Personnel	46,066	63,290	NR	168,476	50,034	392,267	53,103	NR	76,576
Admin./Other Personnel	560.0%	59.2%	NR	65.9%	125.9%	41.7%	153.8%	NR	176.0%
NON-VEHICLE MAINTENANCE									
Route Miles/Admin. Personnel	12.60	3.56	NR	2.37	170.50	1.19	3.67	NR	3.93
Route Miles/Support Personnel		0.74	NR	0.57	0.20	0.57	0.48	NR	0.55
Admin./Other Personnel		478.6%	NR	414.7%	85050.0%	207.8%	769.4%	NR	716.7%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	100,508	537,962	NR	259,194	463,220	332,833	544,309	NR	811,702
Vehicle Miles/General Admin. Support Personnel	65,035	18,236	NR	31,708	65,871	49,033	68,755	NR	126,829
General Admin./Other Functional Personnel	24.2%	324.1%	NR	78.4%	283.4%	57.7%	234.3%	NR	327.1%

O & M COST DATA BASE
STRATUM 4
1987 LIGHT RAIL
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON

	9054 S. D. Trolley	MINIMUM	MAXIMUM
VEHICLE OPERATIONS			
Platforms Hours/Transportation Admin. Personnel	7,897	7,897	51,675
Platforms Hours/Revenue Vehicle Operation Personnel	2,936	945	2,936
Platform Hours/Transportation Support Personnel	63,611	3,156	63,611
Transportation Admin./Other Personnel	11.9%	11.9%	367.9%
VEHICLE MAINTENANCE			
Vehicle Miles/Admin. Personnel	416,551	53,796	416,551
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	119,699	19,512	119,699
Vehicle Miles/Support Personnel	100,616	46,066	392,267
Admin./Other Personnel	189.1%	41.7%	189.1%
NON-VEHICLE MAINTENANCE			
Route Miles/Admin. Personnel	13.67	1.19	170.50
Route Miles/Support Personnel	3.42	0.20	3.42
Admin./Other Personnel	400.0%	207.8%	85050.0%
GENERAL ADMINISTRATION			
Vehicle Miles/Marketing and Planning Personnel		100,508	811,702
Vehicle Miles/General Admin. Support Personnel	142,655	18,236	142,655
General Admin./Other Functional Personnel	20.1%	20.1%	327.1%

**O & M COST DATA BASE
STRATUM 4
1988 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	0008 Portland	1003 MBTA	2004 Buffalo	3019 SEPTA	3022 PAT	5015 Cleveland RTA	6032 New Orleans	9013 Santa Clara	9015 MUNI
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	22,587	16,932	NR	9,588	21,336	13,877	50,588	2,151	14,752
Platforms Hours/Revenue Vehicle Operation Personnel	1,506	1,814	NR	1,388	1,711	2,092	1,384	924	1,788
Platform Hours/Transportation Support Personnel	3,475	6,350	NR	29,221	5,715	5,754	12,366	2,415	4,859
Transportation Admin./Other Personnel	453.5%	207.4%	NR	31.3%	287.3%	176.9%	367.9%	64.4%	221.9%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	710,200	56,275	NR	140,977	149,146	186,897	120,473	28,877	169,033
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	67,638	28,859	NR	33,095	40,002	61,243	24,450	14,006	19,504
Vehicle Miles/Support Personnel	59,183	66,206	NR	180,920	78,470	387,143	53,870	26,885	76,543
Admin./Other Personnel	560.0%	59.2%	NR	65.9%	125.9%	41.7%	153.8%	70.6%	176.0%
NON-VEHICLE MAINTENANCE									
Route Miles/Admin. Personnel	15.10	3.99	NR	2.11	205.50	1.19	4.53	3.95	4.14
Route Miles/Support Personnel		0.83	NR	0.51	0.24	0.57	0.59	0.55	0.58
Admin./Other Personnel		478.6%	NR	414.7%	85050.0%	207.8%	769.4%	722.7%	716.7%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	129,127	562,750	NR	278,338	726,484	328,485	552,167	106,318	811,360
Vehicle Miles/General Admin. Support Personnel	83,553	19,076	NR	34,050	103,307	48,393	69,747	12,246	126,775
General Admin./Other Functional Personnel	24.6%	329.8%	NR	79.0%	279.8%	57.4%	236.3%	157.5%	327.5%

O & M COST DATA BASE
STRATUM 4
1988 RAIL RAPID
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON

	9054 S. D. Trolley	MINIMUM	MAXIMUM
VEHICLE OPERATIONS			
Platforms Hours/Transportation Admin. Personnel	8,110	2,151	50,588
Platforms Hours/Revenue Vehicle Operation Personnel	3,015	924	3,015
Platform Hours/Transportation Support Personnel	65,333	2,415	65,333
Transportation Admin./Other Personnel	11.9%	11.9%	367.9%
VEHICLE MAINTENANCE			
Vehicle Miles/Admin. Personnel	428,160	28,877	428,160
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	123,034	14,006	123,034
Vehicle Miles/Support Personnel	103,420	26,885	387,143
Admin./Other Personnel	189.1%	41.7%	189.1%
NON-VEHICLE MAINTENANCE			
Route Miles/Admin. Personnel	13.67	1.19	205.50
Route Miles/Support Personnel	3.42	0.24	3.42
Admin./Other Personnel	400.0%	207.8%	85050.0%
GENERAL ADMINISTRATION			
Vehicle Miles/Marketing and Planning Personnel		106,318	811,360
Vehicle Miles/General Admin. Support Personnel	146,630	12,246	146,630
General Admin./Other Functional Personnel	20.1%	20.1%	329.8%

**O & M COST DATA BASE
STRATUM 4
1989 LIGHT RAIL
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	0008 Portland	1003 MBTA	2004 Buffalo	3019 SEPTA	3022 PAT	5015 Cleveland RTA	6032 New Orleans	9013 Santa Clara	9015 MUNI
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	24,632	13,667	10,696	8,393	10,477	8,222	20,367	2,328	15,288
Platforms Hours/Revenue Vehicle Operation Personnel	2,962	1,344	3,841	1,616	1,152	1,942	1,222	1,253	1,745
Platform Hours/Transportation Support Personnel	7,145	4,316	7,682	24,596	4,032	3,433	20,367	8,520	3,784
Transportation Admin./Other Personnel	243.7%	241.5%	92.8%	32.0%	202.1%	153.0%	94.3%	23.8%	276.5%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	115,041	76,888	158,810	151,066	87,717	186,898	107,078	54,323	160,092
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	108,846	33,249	61,407	29,576	29,999	46,527	18,831	28,010	18,790
Vehicle Miles/Support Personnel	257,273	68,344	129,732	161,718	62,997	57,135	42,008	57,213	74,117
Admin./Other Personnel	31.4%	75.7%	83.1%	79.0%	94.3%	180.3%	176.0%	63.7%	172.3%
NON-VEHICLE MAINTENANCE									
Route Miles/Admin. Personnel	27.45	4.66	0.80	1.74		9.29	5.43	3.48	3.82
Route Miles/Support Personnel	1.26	0.65	0.21	0.42	0.48	0.58	0.59	0.67	0.62
Admin./Other Personnel	2172.7%	716.7%	381.9%	409.5%		1600.0%	920.0%	520.0%	615.4%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	294,792	615,100		238,000	384,981	282,744	1,365,250	336,125	1,000,575
Vehicle Miles/General Admin. Support Personnel	68,029	26,743	44,932	30,432	58,561	31,150	287,421	26,363	181,923
General Admin./Other Functional Personnel	70.3%	324.5%	12.1%	71.2%	225.9%	103.2%	787.4%	239.0%	431.9%

O & M COST DATA BASE
STRATUM 4
1989 LIGHT RAIL
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON

	9054 S. D. Trolley	MINIMUM	MAXIMUM
VEHICLE OPERATIONS			
Platforms Hours/Transportation Admin. Personnel	8,006	2,328	20,367
Platforms Hours/Revenue Vehicle Operation Personnel	2,936	1,152	3,841
Platform Hours/Transportation Support Personnel	66,050	3,433	66,050
Transportation Admin./Other Personnel	11.6%	23.8%	276.5%
VEHICLE MAINTENANCE			
Vehicle Miles/Admin. Personnel		54,323	186,898
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel		18,790	61,407
Vehicle Miles/Support Personnel		42,008	161,718
Admin./Other Personnel		31.4%	180.3%
NON-VEHICLE MAINTENANCE			
Route Miles/Admin. Personnel	10.25	0.80	10.25
Route Miles/Support Personnel	2.73	0.21	2.73
Admin./Other Personnel	375.0%	381.9%	1600.0%
GENERAL ADMINISTRATION			
Vehicle Miles/Marketing and Planning Personnel		238,000	1,365,250
Vehicle Miles/General Admin. Support Personnel		26,363	287,421
General Admin./Other Functional Personnel		12.1%	787.4%

**Stratum 4
Motor Bus**

O & M COST DATA BASE
STRATUM 4
1986 MOTOR BUS
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON

	0001 Seattle Metro	5008 Milwaukee	5012 SORTA	5027 Minneapolis	5113 Chicago Sub.	5119 City of Detroit	6004 Dallas	6008 Houston	6011 San Antonio
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	13,278	19,887	34,668	91,387	41,602	107,776	42,227	25,552	31,050
Platforms Hours/Revenue Vehicle Operation Personnel	1,601	1,937	1,961	1,659	1,581	1,807	1,777	1,848	1,797
Platform Hours/Transportation Support Personnel	37,506	20,545	29,201	31,645	54,083	12,903	22,977	63,241	52,785
Transportation Admin./Other Personnel	34.0%	88.5%	111.3%	274.4%	74.7%	732.7%	170.6%	39.3%	56.9%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	1,621,471	400,898	476,645	1,858,182	647,292	607,474	443,898	287,317	445,011
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	132,677	124,144	83,235	91,396	103,886	56,302	83,847	90,879	158,933
Vehicle Miles/Support Personnel	205,525	337,184	710,414	594,927	382,491	274,810	184,055	215,903	379,888
Admin./Other Personnel	479.4%	86.9%	60.1%	270.7%	133.1%	183.5%	165.7%	93.7%	82.6%
NON-VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	3,122,833	9,441,150	5,576,750	16,832,941			11,319,400	1,965,853	15,575,400
Vehicle Miles/Support Personnel	282,941	627,319	637,343	590,021	4,207,400	278,120	419,237	485,081	471,982
Admin./Other Personnel	1103.7%	1505.0%	875.0%	2852.9%			2700.0%	405.3%	3300.0%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	255,118.00	963,382.65	351,845.43	638,750.00			337,892.54	359,146.15	362,218.60
Vehicle Miles/General Admin. Support Personnel	214,956.02	233,402.97	287,461.34	124,039.88	311,659.26	178,945.74	168,946.27	64,177.32	198,412.74
General Admin./Other Functional Personnel	8.7%	10.9%	8.5%	3.8%	5.7%	13.4%	4.0%	13.5%	3.3%

**O & M COST DATA BASE
STRATUM 4
1986 MOTOR BUS
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	7006 Bi State	8001 Salt Lake	8006 Denver	9002 Honolulu	9014 AC Transit	9021 SCRTD	9036 Orange County	MINIMUM	MAXIMUM
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	25,103	21,553	45,005	38,828	48,031	16,316	22,884	13,278	107,776
Platforms Hours/Revenue Vehicle Operation Personnel	1,821	1,729	1,931	1,606	1,549	1,511	1,579	1,511	1,961
Platform Hours/Transportation Support Personnel	168,486	50,204	23,093	25,022	18,474	56,267	24,101	12,903	168,486
Transportation Admin./Other Personnel	14.7%	41.5%	179.9%	145.8%	239.9%	28.2%	89.1%	14.7%	732.7%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	604,637	35,078	412,360	512,039	587,560	530,407	402,550	35,078	1,858,182
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	85,449	9,817	110,371	98,240	158,075	86,376	158,271	9,817	158,933
Vehicle Miles/Support Personnel	1,206,408	23,705	330,622	244,888	261,687	138,156	244,250	23,705	1,206,408
Admin./Other Personnel	46.8%	104.6%	93.5%	149.2%	140.0%	236.2%	100.0%	46.8%	270.7%
NON-VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	3,636,457	1,126,000	2,699,082	8,448,650	10,380,233	3,639,686	6,232,586	1,126,000	16,832,941
Vehicle Miles/Support Personnel	342,600	60,538	366,542	16,897,300	662,568	348,353	881,683	60,538	16,897,300
Admin./Other Personnel	1061.4%	1860.0%	736.4%	50.0%	1566.7%	1044.8%	706.9%	50.0%	3300.0%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	503,067.19	24,425.16	318,903.33	567,023.49	662,568.09	423,899.20	296,303.28	24,425	963,383
Vehicle Miles/General Admin. Support Personnel	165,079.12	15,134.41	125,115.47	256,019.70	173,003.89	96,130.15	105,206.64	15,134	311,659
General Admin./Other Functional Personnel	11.0%	3.0%	11.1%	3.1%	6.9%	10.8%	5.0%	3.0%	13.5%

**O & M COST DATA BASE
STRATUM 4
1987 MOTOR BUS
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	0001 Seattle Metro	5008 Milwaukee	5012 SORTA	5027 Minneapolis	5113 Chicago Sub.	5119 City of Detroit	6004 Dallas	6008 Houston	6011 San Antonio
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	13,009	19,754	35,307	10,514	80,332	115,123	34,473	28,303	24,770
Platforms Hours/Revenue Vehicle Operation Personnel	1,516	1,920	1,860	1,890	1,632	1,380	1,764	1,890	1,831
Platform Hours/Transportation Support Personnel	42,613	21,440	29,122	30,561	31,240	14,390	23,587	37,737	33,221
Transportation Admin./Other Personnel	29.5%	84.6%	114.0%	32.4%	244.4%	730.0%	136.0%	71.4%	70.7%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	1,838,733	393,285	476,749	1,852,680	612,250	591,015	422,306	316,098	509,318
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	115,932	133,441	77,145	91,527	138,250	58,650	78,205	82,010	168,075
Vehicle Miles/Support Personnel	186,475	347,145	555,820	632,723	439,564	291,767	185,222	173,181	373,500
Admin./Other Personnel	608.0%	81.8%	75.3%	255.8%	106.0%	168.7%	160.3%	123.9%	94.0%
NON-VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	3,194,566	9,320,850	4,069,393	1,667,412		7,683,200	10,557,650	1,627,905	16,807,500
Vehicle Miles/Support Personnel	272,640	558,135	411,347	580,861	2,857,167	274,400	370,444	392,266	480,214
Admin./Other Personnel	1171.7%	1670.0%	989.3%	287.1%		2800.0%	2850.0%	415.0%	3500.0%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	240,138	871,107	344,239	641,312		622,962	335,163	313,059	466,875
Vehicle Miles/General Admin. Support Personnel	194,384	227,061	303,040	125,203	295,569	172,012	161,185	56,623	244,295
General Admin./Other Functional Personnel	7.7%	10.2%	11.4%	15.7%	7.1%	8.8%	4.3%	13.9%	3.9%

O & M COST DATA BASE

STRATUM 4

1987 MOTOR BUS

LEVEL R FUNCTIONS

UNIT OF SERVICE PER PERSON

	7006 Bi State	8001 Salt Lake	8006 Denver	9002 Honolulu	9014 AC Transit	9021 S CRTD	9036 Orange County	MINIMUM	MAXIMUM
VEHICLE OPERATIONS									
Platforms Hours/Transportation Admin. Personnel	24,271	22,269	61,958	40,425	85,627	17,325	20,741	10,514	115,123
Platforms Hours/Revenue Vehicle Operation Personnel	1,830	1,760	1,611	1,633	1,698	1,534	1,549	1,380	1,920
Platform Hours/Transportation Support Personnel	187,659	50,768	16,407	25,153	18,553	65,291	25,335	14,390	187,659
Transportation Admin./Other Personnel	12.8%	42.4%	343.9%	150.9%	422.8%	25.9%	77.2%	12.8%	730.0%
VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	658,942	433,044	837,062	528,384	652,288	496,911	374,165	316,098	1,852,680
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	68,473	122,258	111,476	105,020	149,094	69,942	163,697	58,650	168,075
Vehicle Miles/Support Personnel	783,662	283,110	208,341	307,424	287,246	136,430	212,625	136,430	783,662
Admin./Other Personnel	77.3%	106.8%	261.7%	128.1%	149.5%	240.8%	99.4%	75.3%	261.7%
NON-VEHICLE MAINTENANCE									
Vehicle Miles/Admin. Personnel	8,013,581	13,900,700	2,357,725	8,454,150	10,436,600	4,686,087	6,648,615	1,627,905	16,807,500
Vehicle Miles/Support Personnel	286,199	837,392	330,909	768,559	869,717	340,215	939,478	272,640	2,857,167
Admin./Other Personnel	2800.0%	1660.0%	712.5%	1100.0%	1200.0%	1377.4%	707.7%	287.1%	3500.0%
GENERAL ADMINISTRATION									
Vehicle Miles/Marketing and Planning Personnel	498,837	302,847	360,876	547,194	728,135	407,178	273,087	240,138	871,107
Vehicle Miles/General Admin. Support Personnel	153,441	196,894	101,154	251,987	141,035	94,296	96,572	56,623	303,040
General Admin./Other Functional Personnel	6.5%	3.2%	11.8%	7.8%	7.0%	8.6%	4.4%	3.2%	15.7%

**O & M COST DATA BASE
STRATUM 4
1988 MOTOR BUS
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	0001 Seattle Metro	5008 Milwaukee	5012 SORTA	5027 Minneapolis	5113 Chicago Sub.	5119 City of Detroit	6004 Dallas	6008 Houston	6011 San Antonio	7006 Bi State
VEHICLE OPERATIONS										
Platforms Hours/Transportation Admin. Personnel	22,186	18,464	64,963	9,672	147,652	131,792	11,907	55,480	30,601	63,208
Platforms Hours/Revenue Vehicle Operation Personnel	1,550	1,941	1,855	1,801	1,576	1,746	1,723	1,990	1,853	1,853
Platform Hours/Transportation Support Personnel	19,757	21,537	24,564	29,244	29,829	15,249	43,426	20,078	33,465	42,843
Transportation Admin./Other Personnel	104.1%	78.6%	245.9%	31.2%	470.2%	775.5%	26.4%	251.4%	86.6%	141.4%
VEHICLE MAINTENANCE										
Vehicle Miles/Admin. Personnel	282,230	358,120	488,787	1,801,454	758,800	550,433	281,718	274,194	1,031,685	716,337
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	140,047	123,847	83,316	89,338	115,700	64,504	87,742	94,788	156,892	129,103
Vehicle Miles/Support Personnel	313,432	373,012	506,806	613,948	387,472	364,257	244,331	309,705	423,453	221,482
Admin./Other Personnel	62.2%	72.1%	82.8%	256.1%	150.8%	128.4%	84.8%	67.8%	177.8%	204.3%
NON-VEHICLE MAINTENANCE										
Vehicle Miles/Admin. Personnel	1,045,468	9,914,263	4,229,885	15,212,278		6,192,375	3,385,161	5,772,259	21,278,500	885,929
Vehicle Miles/Support Personnel	277,501	523,253	415,008	616,714	5,356,235	309,619	303,295	435,926	292,991	296,007
Admin./Other Personnel	376.7%	1894.7%	1019.2%	2466.7%		2000.0%	1116.1%	1324.1%	7262.5%	299.3%
GENERAL ADMINISTRATION										
Vehicle Miles/Marketing and Planning Personnel	267,136	884,371	355,913	658,224		688,042	272,218	459,247	475,497	402,437
Vehicle Miles/General Admin. Support Personnel	159,254	211,891	316,026	155,052	337,244	176,925	92,377	63,685	230,349	193,754
General Admin./Other Functional Personnel	20.3%	9.7%	11.6%	4.4%	5.0%	11.3%	8.4%	7.5%	3.0%	25.3%

O & M COST DATA BASE
STRATUM 4

1988 MOTOR BUS

LEVEL R FUNCTIONS

UNIT OF SERVICE PER PERSON

	8001 Salt Lake	8006 Denver	9002 Honolulu	9014 AC Transit	9021 SCRITD	9036 range Count	MINIMUM	MAXIMUM
VEHICLE OPERATIONS								
Platforms Hours/Transportation Admin. Personnel	21,598	69,666	43,508	32,297	16,851	16,847	9,672	147,652
Platforms Hours/Revenue Vehicle Operation Personnel	1,833	1,709	1,637	2,126	1,540	1,575	1,540	2,126
Platform Hours/Transportation Support Personnel	52,865	17,976	25,138	26,389	69,298	24,349	15,249	69,298
Transportation Admin./Other Personnel	39.5%	353.9%	162.5%	113.3%	23.8%	65.0%	23.8%	775.5%
VEHICLE MAINTENANCE								
Vehicle Miles/Admin. Personnel	388,725	832,704	566,907	639,650	514,576	342,816	274,194	1,801,454
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	112,589	126,741	96,632	152,455	61,827	163,942	61,827	163,942
Vehicle Miles/Support Personnel	279,985	235,009	239,538	372,454	136,052	199,408	136,052	613,948
Admin./Other Personnel	99.0%	230.2%	168.6%	121.9%	260.0%	94.3%	62.2%	260.0%
NON-VEHICLE MAINTENANCE								
Vehicle Miles/Admin. Personnel	12,711,300	1,014,385	8,503,600	14,711,950	4,210,716	4,632,410	885,929	21,278,500
Vehicle Miles/Support Personnel	853,107	453,587	17,007,200	817,331	322,261	921,755	277,501	17,007,200
Admin./Other Personnel	1490.0%	223.6%	50.0%	1800.0%	1306.6%	502.6%	50.0%	7262.5%
GENERAL ADMINISTRATION								
Vehicle Miles/Marketing and Planning Personnel	272,775	418,853	568,803	840,683	425,542	247,485	247,485	884,371
Vehicle Miles/General Admin. Support Personnel	199,237	123,323	257,295	198,810	90,142	88,517	63,685	337,244
General Admin./Other Functional Personnel	3.3%	19.7%	3.1%	6.2%	9.7%	5.3%	3.0%	25.3%

**O & M COST DATA BASE
STRATUM 4
1989 MOTOR BUS
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	0001 Seattle Metro	5008 Milwaukee	5012 SORTA	5027 Minneapolis	5113 Chicago Sub.	5119 City of Detroit	6056 Dallas	6008 Houston	6011 San Antonio	7006 Bi State
VEHICLE OPERATIONS										
Platforms Hours/Transportation Admin. Personnel	24,511	18,304	68,082	9,417	151,825	147,308	30,652	65,676	29,716	38,431
Platforms Hours/Revenue Vehicle Operation Personnel	1,486	1,939	1,874	1,775	1,588	1,964	1,764	1,943	1,888	1,836
Platform Hours/Transportation Support Personnel	16,701	21,834	30,993	29,058	30,518	16,092	32,486	19,102	34,975	70,588
Transportation Admin./Other Personnel	134.8%	77.0%	207.1%	30.5%	472.9%	815.8%	89.5%	312.1%	80.6%	53.1%
VEHICLE MAINTENANCE										
Vehicle Miles/Admin. Personnel	247,325	324,895	541,724	1,736,774	692,110	505,276	280,645	311,492	1,101,951	687,494
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	175,587	127,037	83,710	88,254	144,588	62,051	77,150	100,705	155,513	130,324
Vehicle Miles/Support Personnel	322,325	391,786	449,652	662,223	276,032	364,096	253,256	244,166	514,665	240,420
Admin./Other Personnel	49.7%	62.6%	101.6%	231.4%	164.5%	118.6%	84.9%	90.3%	164.4%	185.4%
NON-VEHICLE MAINTENANCE										
Vehicle Miles/Admin. Personnel	1,059,373	9,815,263	6,691,882	15,341,500		4,126,417	2,378,798	5,193,090	16,328,909	874,100
Vehicle Miles/Support Personnel	276,118	474,529	434,206	547,911	3,620,269	339,158	321,770	407,420	368,825	354,194
Admin./Other Personnel	383.7%	2068.4%	1541.2%	2800.0%		1216.7%	739.3%	1274.6%	4427.3%	246.8%
GENERAL ADMINISTRATION										
Vehicle Miles/Marketing and Planning Personnel	266,174	855,459	374,217	576,507		669,149	191,581	456,012	485,454	404,542
Vehicle Miles/General Admin. Support Personnel	139,330	214,603	360,006	157,528	344,788	188,996	70,210	66,514	229,985	159,031
General Admin./Other Functional Personnel	19.1%	9.6%	8.8%	4.0%	7.0%	15.4%	7.8%	8.2%	3.9%	23.5%

**O & M COST DATA BASE
STRATUM 4
1989 MOTOR BUS
LEVEL R FUNCTIONS
UNIT OF SERVICE PER PERSON**

	8001 Salt Lake	8006 Denver	9002 Honolulu	9014 AC Transit	9021 SCRTD	9036 Orange County	MINIMUM	MAXIMUM
VEHICLE OPERATIONS								
Platforms Hours/Transportation Admin. Personnel	19,266	52,663	57,657	23,457	20,314	19,270	9,417	151,825
Platforms Hours/Revenue Vehicle Operation Personnel	2,031	1,723	1,917	1,603	1,681	1,765	1,486	2,031
Platform Hours/Transportation Support Personnel	169,235	17,240	30,938	28,788	55,532	31,888	16,092	169,235
Transportation Admin./Other Personnel	11.2%	277.7%	175.5%	77.2%	35.5%	57.3%	11.2%	815.8%
VEHICLE MAINTENANCE								
Vehicle Miles/Admin. Personnel	468,088	808,076	701,913	675,451	541,592	390,414	247,325	1,736,774
Vehicle Miles/Rev. Vehicle Inspection & Maint. Personnel	151,732	127,468	114,309	119,008	97,923	161,418	62,051	161,418
Vehicle Miles/Support Personnel	372,039	223,554	285,005	308,540	239,326	296,998	223,554	662,223
Admin./Other Personnel	89.4%	230.2%	175.8%	158.0%	160.6%	85.2%	49.7%	231.4%
NON-VEHICLE MAINTENANCE								
Vehicle Miles/Admin. Personnel	35,808,750	982,309	11,324,200	12,495,850	6,878,592	4,285,262	874,100	35,808,750
Vehicle Miles/Support Personnel	1,030,468	413,523	21,232,875	675,451	399,034	1,168,708	276,118	21,232,875
Admin./Other Personnel	3475.0%	237.5%	53.3%	1850.0%	1723.8%	366.7%	53.3%	4427.3%
GENERAL ADMINISTRATION								
Vehicle Miles/Marketing and Planning Personnel	379,934	407,779	674,060	640,813	621,865	312,467	191,581	855,459
Vehicle Miles/General Admin. Support Personnel	269,746	115,288	290,364	164,419	145,846	96,816	66,514	360,006
General Admin./Other Functional Personnel	1.7%	19.9%	2.9%	5.6%	9.3%	6.4%	1.7%	23.5%

**APPENDIX 2
COST,
LABOR PRODUCTIVITY,
& PHYSICAL
CHARACTERISTICS
OF LIGHT RAIL
& RAPID TRANSIT
PROPERTIES**

ATTACHMENT A-2. COST, LABOR PRODUCTIVITY, & PHYSICAL CHARACTER OF LIGHT RAIL & RAIL RAPID PROPERTIES

Transit Property	City	Operating Expense (Millions)	Vehicle Revenue Miles (Millions)	Peak Vah	Avg Speed (mph)	Unlinked Pass Trips (Millions)	Average Cost per Veh-Mile	Top Hourly Wage (As of 5-1-90)		Labor Productivity				% Contracted		
								Operator	Ref	Veh Maint Employees per Million Veh-Mi	Non-Veh Maint Employees per Rte-M	Gen Admin Employees per Million Veh-Mi	Est. Pay Hr/ Plat Hr Ratio	Veh Maint	Non-Veh Maint	
																Mechanic
LIGHT RAIL																
MBTA	Boston	\$20,718	1,184		14.9	20,500	\$17,498	\$17.76	\$20.41	72.64	59.97	3.51	40.54	1,454	7.70%	14.03%
NJT	Newark	\$3,665	0.622	22	14.8	4,065	\$5,892	\$14.61	\$15.30	40.35	45.18	0.09	8.68	1,189	0.00%	11.50%
SEPTA	Philadelphia	\$46,592	4,832	176	8.9	48,594	\$9,642	\$13.36 \$12.90	\$15.21 \$13.60	91.14	48.68	5.87	38.70	1,513	0.02%	
PAT	Pittsburgh	\$23,504	1,988	61	15.0	9,044	\$11,823	\$14.93	\$15.33	84.31	63.38	4.21	20.57	1,289		
NFTA	Buffalo	\$11,379	0.919	23	11.2	8,072	\$12,382	\$12.36	\$13.66	44.50	30.36	12.05	22.31		0.00%	14.81%
GCRTA	Cleveland	\$10,664	1,035	29	23.3	5,110	\$10,303	\$14.00	\$15.06	59.71	47.25	3.66	37.97	1,432		
Tri-Met RTD	Portland	\$7,996	1,400	22	19.2	8,185	\$5,711	\$13.91	\$14.37	34.84	22.00	1.86	18.29	1,432		
Muni	Sacramento	\$8,239	1,060	23	19.8	4,011	\$7,773	\$14.86	\$18.23	45.19	22.64	0.67	7.55			
	San Francisco	\$53,539	4,002	103	10.5	38,909	\$13,378	\$16.29	\$27.88	86.21	72.96	3.74	8.50		0.37%	0.27%
SCCTD	San Jose	\$9,944	0,534	16	12.9	2,008	\$18,822	\$16.93	\$19.07	107.30	72.10	3.56	41.20			
San Diego	San Diego	\$9,159	2,367	24	18.9	11,217	\$3,869	\$13.65	\$15.27	28.83	20.49	0.93	7.18		10.37%	9.15%
RAIL RAPID																
MBTA	Boston	\$201,254	21,858	449	20.4	157,938	\$9,207	\$17.57 \$17.35	\$20.41	41.08	25.25	8.01	34.18	1,084	5.77%	28.65%
NYCTA	New York	\$2,426,450	312,195	5024	18.0	1,702,811	\$7,772	\$17.67	\$17.87	20.71	15.80	35.74	28.89		1.93%	1.70%
PATH	Newark/NY	\$119,886	13,190	297	21.0	60,495	\$9,074	\$15.42 \$20.00	\$20.35	32.07	17.21	25.38	13.85		0.75%	2.44%
SEPTA	Philadelphia	\$128,186	18,276	297	15.8	94,100	\$7,878	\$17.19 \$13.36	\$15.21	47.57	32.66	12.00	14.52	1,513	0.27%	2.40%
PATCO	Underwood	\$20,133	4,096	90	29.0	11,025	\$4,915	\$14.50	\$15.92	18.73	17.31	5.99	21.86		6.33%	8.07%
MTA	Baltimore	\$31,048	3,530	80	24.1	13,984	\$8,795	\$14.02	\$15.36	31.87	23.97	12.09	32.38	2,535	2.34%	10.86%
WMATA	Washington	\$228,783	32,859	578	23.4	183,480	\$6,963	\$16.86	\$18.75	26.56	22.07	17.60	18.93	1,354	1.85%	12.23%
MARTA	Atlanta	\$58,313	14,619	139	23.8	85,603	\$3,989	\$12.71	\$14.55	35.71	11.83	5.91	9.99	1,334		
Metro Dade GCRTA	Miami Cleveland	\$38,162 \$20,163	4,657 1,952	70 35	23.9 26.4	12,128 7,860	\$8,195 \$10,329	\$13.07 \$13.90	\$17.94 \$15.06	23.94 53.53	32.90 46.62	4.62 4.35	27.01 35.35	1,734 1,816	0.25%	62.75%
CTA	Chicago	\$263,542	54,630	923	23.5	168,659	\$4,824	\$14.60	\$15.88	41.88	14.00	8.82	5.73	1,263		
BART	San Francisco	\$185,320	33,195	348	28.7	64,065	\$4,980	\$18.34 \$17.93	\$19.29	14.60	12.42	6.81	14.07			

See attached references

ATTACHMENT A-2: COST, LABOR PRODUCTIVITY, & PHYSICAL CHARACTER OF LIGHT RAIL & RAIL RAPID PROPERTIES

Transit Property	City	Operating Budget Data																Age of Vehicles			
		Fiscal Year	Transportation		Vehicle Maintenance		Max Vehicle/ Servicer	Servicers + Mechanics/ Supv	Power		Mechanics of Way		Track & Structures		Facilities		Signals & Commun		Avg Age	% < 10 Yrs [Ref10]	
			Vehicle Rev Hrs/ Operator	Operators/ Supv	Mechanics/ Max Vehicle	Vehicle Rev Hrs/ Mechanic			Trk Mile	Mechanics Unemen/ Supervisor	Track Workers/ Rte-Mile	Track Workers/ Supervisor	Facility Station	Facility Maintainers/ Supervisor	Track Workers/ Rte-Mile	Maintainers/ Supervisor	Signalers/ Rte-Mile	Maintainers/ Supervisor			
LIGHT RAIL																					
MBTA	Boston																			7.5	44%
NJT	Newark																			42.0	0%
SEPTA	Philadelphia																				
PAT	Pittsburgh	FY91	1,313	3.9	1.1	39,736	1.8	4.5	0.7	5.8	6.4	2.7	3.2						11.9	79%	
NFTA	Buffalo	FY91	3,174	4.6	1.2	47,933	3.3	8.7	0.9	5.5	10.0								5.0	100%	
GCRTA	Cleveland																		8.0	100%	
Tri-Met	Portland	FY89	2,212	3.0	1.0	66,648	5.5	8.3	0.1	0.3	9.0	0.1							5.0	100%	
RTD	Sacramento	FY90	2,325	2.1	1.2	69,650	8.7	8.7	0.4	0.4	7.3								3.0	100%	
Muni	San Francisco																		15.5	0%	
SCCTD	San Jose	FY92	1,383	4.9	1.2	49,064	3.1	7.8	0.3	12.0	10.0	0.3	11.0						13.0		
San Diego	San Diego	FY90	2,881	4.8	1.5	133,825	45.0	7.8	0.5	10.0	8.0	0.8	14.0								
RAIL RAPID																					
MBTA	Boston																			9.8	83%
NYCTA	New York																			17.2	29%
PATH	Newark/NY																			18.1	25%
SEPTA	Philadelphia																			22.7	33%
PATCO	Udandnworld																			4.4	100%
MTA	Baltimore																			7.9	53%
WMATA	Washington	FY93		5.4	0.9	66,516	7.0	12.4	0.8	10.5	7.0	4.9	8.1						11.4		
MARTA	Atlanta	FY90		3.1	1.5	171,529	8.3	7.5	0.8	8.8	7.7	1.1	4.8						8.4	100%	
Metro Dada	Miami																			5.0	100%
GCRTA	Cleveland																			8.0	100%
CTA	Chicago																			12.6	49%
BART	San Francisco																			13.1	17%

See attached references

Transit Property	City	Key Dates Initiation of service, expansion of service, end/or electrification	Vehicle Size			Total Cap	Drasal/Elec	One-Way Route-Miles			Track Miles	1,000 Veh-Mil par Track Mile	Stations			CBD Operations			Other Street Ops							
			Length (Feet)	Width (Feet)	Artic Veh?			Seats	Total	Sub way			Sur face	Aerial	Total	Sub way	Sur face	Aerial		Maint Fedl	Street	Mall way	Sub way			
LIGHT RAIL	MBTA	1897 Tremont St. Subway	71	8.9	X	52		28.0	4.2	22.8	1.0	77.5	15.28	85	10	73	2	5			X					
		1959 Riverside line begins operation																								
		1935 Service begins	46.4	9				4.3	1.2	3.1	0.0	8.3	74.94	11	4	7	0	1				X				
		1984 Reconstruction of trackbed and rehabilitated vehicles																								
		1905 Streetcar service begins	50-53	10.8		50-51		63.4	1.2	62.2	0.0	171.5	28.17	80	6	52	0	2.5					X			
	PAT	Pittsburgh	1890 Streetcar service begins	84.6	8.8	X	62	170	22.4			0.0	62.4	31.86	80	4	78	0	1				X			
			1987 Approx. 2/3 of sys rebuilt/new cars/downtown subway																							
			1984 Downtown transit mall begins operation	67					6.2	5.2	1.0	0.0	14.1	65.16	14	6	6	0	1					X		
			1985 Tunnel operation	77	9.3	X	84		13.0	0.0	13.0	0.0	28.3	36.57	29	1	28	0	0.4					X		
			1980 Total reconstruction of former Shaker Rapid																							
Tri-Met RTD	Portland	1986 Service begins	86	8.7	X	76	166	15.1	0.0	14.6	0.5	29.1	48.11	24	0	24	0	1					X			
		1987 Service begins	79.5	8.8	X	64		16.3				56.2	16.66	15									X			
		1912 Service begins	71	8.9	X	68		24.9	5.3	19.6	0.0	54.2	73.64										X			
		1981 Muni Metro service under Market Street																						X		
		1987 Service begins from downtown north to Old Ironsides																						X		
San Diego	San Diego	1981 Extension to southern suburbs	88.5	8.7	X	75	188	6.7	6.7	0.0	0.0	19.5	27.38	20									X			
		1981 First line begins operation	75.6	8.7	X	84	124	20.5	0.0	20.5	0.0	41.0	57.73	22	0	22	0	1					X			
		1989 Extension to El Cajon																								
		1990 Bayside Line opens																								
RAIL RAPID	MBTA	1904 East Boston/Blue Line service begins	48.6	9.2		42	109	76.7	14.1	62.1	0.5	107.7	202.95	53	24	28	1	3								
		1908 Washington Street subway/Orange Line service begins	85.3	9.2		56	153																			
		1988 Orange Line moved to Southwest Corridor alignment																								
		1912 Red Line service begins	89.6	10		61	166																			
		1985 Red Line extended to Alewife	51.3	8.6		<--A	Division	246.5	137.0	15.8	93.6	895.9	446.62	489												
	NYCTA	New York	1904 IRT subway operations begin	10.5-75	10		35	125	13.8	7.4	6.4	0.0	35.6	388.44	13	3	10	0	2							
			1988 Queens-Archer Avenue extension	51.2	9.2		<--B	Division																		
			1988 63rd Street tunnel to Roosevelt Island & Queens																							
			1908 Trans Hudson service begins																							
			1990 New Harrison Maint Facility																							
PATH	Newark/NY	1909 New station at Exchange Place	55	9.1		54-56		37.9	14.4	15.1	6.4	97.9	186.25	76	33	26	17	4								
		1905 Market Street subway opens																								
		1912 Norristown High Speed Line opens	67.5	10.1		82-85																				
		1926 Broad Street express tracks extended to Fair Rock																								
		1969 Service begins	67.5	10		76	125	15.6	2.5	9.8	2.3	37.7	108.65	13	6	7	0	1								
SEPTA	Philadelphia	1983 Service begins to Rieisterstown Plaza	75	10.2		76	166	13.3	4.2	8.8	2.5	31.6	111.71	12	8	3	3	1								
		1967 Extension to Owings Mills																								
		1978 Service begins from Rhode Island Ave to Farragut North	75	10		61	160	89.6	33.1	29.7	6.8	151.7	218.61	84	38	22	4	5								
		1990 Extension from Silver Spring to Wheaton																								
		1979 Service begins	75.5	10.5		88		33.5				67.4	187.27	29												
MARTA	Atlanta	1988 Extension to Airport	75	10.4		74	186	21.1	0.0	0.0	21.1	53.2	87.54	21	0	0	21	1								
		1955 Red line operations begin																								
		1968 Hopkins Airport Extension																								
		1990 Rebuilt Center City Terminal																								
		1987 South Side "EF" begins operation	48	9.3		43-49		95.5				212.6	256.96	143	21	30	92	11								
Metro Dada GCRTA	Chicago	1984 O'Hare Airport Extension, River Road maint faci																								
		1992 New Howard Yard, Midway Airport Line (7)																								
		1972 East Bay service begins																								
		1990 Extension from Dely City to new maint faci																								
BART	San Francisco	1972 East Bay service begins																								
		1990 Extension from Dely City to new maint faci																								

ATTACHMENT A-2: COST, LABOR PRODUCTIVITY, & PHYSICAL CHARACTER OF LIGHT RAIL & RAIL RAPID PROPERTIES

Transit Property	City	Organizational structure Relationship to other governmental entities	Vehicle Staffing	Significant Sophisticated Technology	Type of Platforms
<u>LIGHT RAIL</u> MBTA	Boston	Multi-modal transit agency	1 operator/car		Low
NUT	Newark	Operating unit of NJ Transit, a statewide agency	1 operator/car; no trains		Low
SEPTA	Philadelphia	Multi-modal transit agency	1 operator/car; no trains		Low
PAT	Pittsburgh	Multi-modal transit agency	1 operator/train		High on rebuilt sect others low
NFTA	Burlingame	Light rail operates as dept separate from bus	1 operator/train	Subway design standards	High in subway
GCRTA	Cleveland	Multi-modal transit agency	1 operator/train		Low
Tri-Met RTD	Portland Sacramento	Multi-modal transit agency	1 operator/train		Low
Muni	San Francisco	Multi-modal transit agency Agency of City Public Utility Commission	1 operator/train	Subway design standards	High in subway
SCCTD	San Jose	Agency of County Government	1 operator/train		Low
San Diego	San Diego	Light rail is an operating unit of MTDB	1 operator/train	"Off-the-shelf" design	Low
<u>RAIL RAPID</u> MBTA	Boston	Multi-modal transit agency	1 operator & 1 conductor/train	ATC in segments	High
NYCTA	New York	Multi-modal transit agency	1 operator & 1 conductor/train		High
PATH	Newark/NY	MTA assumes financial planning role Operating unit of Port Auth of NY and NJ	1 operator & 1 conductor/train		High
SEPTA	Philadelphia	Multi-modal transit agency	1 operator & 1 conductor/train Norristown: 2-car/2-man		High
PATCO MTA	Udendwood Baltimore	Operating unit within Del River Port Authority Modal administration within state DOT, multi-modal	Broad St: 2-men local, 1-man express 1 operator/train 1 operator/train	AFC, ATC, unmanned stations AFC, ATC	High High
WMATA	Washington	Interstate compact agency, multi-modal	1 operator/train	AFC, ATC	High
MARTA	Atlanta	Multi-modal transit agency	1 operator/train	AFC, ATC, unmanned stations	High
Metro Dade GCRTA	Miami Cleveland	Unit of County government, multi-modal Multi-modal transit agency	1 operator/train 1 operator & 1 conductor/train	AFC, ATC	High High
CTA	Chicago	One of three "service boards" within RTA	Off-peak: 1 operator/1-car train 1 operator & 1 conductor/train	Cab signals in some locations	High
BART	San Francisco	Multi-modal transit agency (also provides express P&R bus service to stations)	Evansville & Skokie: 1-man ops in off-pk 1 operator/train	AFC, ATC	High

See attached references

ATTACHMENT A-2: COST, LABOR PRODUCTIVITY, & PHYSICAL CHARACTER OF LIGHT RAIL & RAIL RAPID PROPERTIES

Source:

All data, except for the following, from "National Urban Mass Transportation Statistics: 1989 Section 15 Annual Report", U.S. Urban Mass Transportation Administration, November 1990:

- Top hourly wages: APTA, Top Hourly Wage Rate Summary, May 1, 1990; updated through 7 – Jun – 90
 - Top hourly wage is defined as the highest combination of the hourly guaranteed wage and the hourly CPI – dependent wage attainable for less than 6 years of employment.
 - Other compensation may include: bonus, longevity payment (either hourly, weekly, bi-weekly, monthly, quarterly, or annual); attendance, safety, compliance, merit, proficiency, performance professionalism, farebox recovery increase, value improvement, or sensitivity incentives; lead operator premiums; and short turn around allowances.
 - Fringes excluded: guarantee time, free transportation for employee or dependents, uniforms, sick leave, holidays, vacations, health and welfare insurance, employer pension contribution.
- Age of fixed plant: published histories of transit systems
- Vehicle size: published histories of transit systems, manufacturers specifications
- WMATA route – miles: WMATA, Standard Coding and Stationing Manual, January 1977
- Stations, by type: some data from transit system maps
- CBD, other street operations: observation
- Agency status: documentation from transit systems, published histories
- Vehicle staffing: observation
- Significant sophisticated technology: observation, published histories
- Type of platforms: observation

References:

1. City Transit Division
2. Red Arrow Division
3. Operator/Engineer
4. Conductor/Guard
5. Full – Time
6. Part – Time
7. New vehicles high, PCC cars low
8. Subway operates with high level, street operations with low level
9. Illinois Central operates with high level, all others with low level
10. Commuter rail ages: Locomotives/Trailer Coaches/Self – Propelled Coaches

**APPENDIX 3
COST,
LABOR PRODUCTIVITY,
& PHYSICAL
CHARACTERISTICS
OF COMMUTER RAIL
PROPERTIES**

ATTACHMENT A-3: COST, LABOR PRODUCTIVITY, & PHYSICAL CHARACTER OF COMMUTER RAIL PROPERTIES

Transit Property	City	Operating Expense (Millions)	Vehicle Revenue Miles (Millions)	Peak Veh.	Avg Speed (mph)	Unlinked Pass Trips (Millions)	Average Cost per Veh-Mile	Top Hourly Wage (As of 1-1-90)		Labor Productivity				Est. Pay Hr/Plat Hr Ratio	% Contracted
								Operator	Ref	Transp Employees per Million Veh-Ml	Veh Maint Employees per Million Veh-Ml	Non-Veh Maint Employees per Rta-Ml	Gen Admin Employees per Million Veh-Ml		
COMMUTER RAIL															
MBTA	Boston	\$84.703	13,211	245	30.8	18,620	\$6.412	\$19.41	3	\$15.54	48.75	23.01	0.08	0.68	
LIRR	New York	\$593.457	57,062	1040	29.8	96,171	\$10.400	\$16.18	4	\$17.48	27.03	28.86	4.06	15.12	
Metro North	New York	\$401.765	35,045	664	36.5	57,344	\$11.464	\$22.75	3	\$17.27	35.21	37.36	4.58	33.79	
SIRTOA	Staten Island	\$17.568	2,089	36	21.2	6,223	\$8.409	\$14.71	3	\$15.49	59.84	20.11	7.83	23.46	
NJ Transit	New Jersey	\$280.363	34,180	613	30.5	42,333	\$8.203	\$13.05	4	\$14.98	40.40	31.28	1.83	11.73	
SEPTA	Philadelphia	\$126.031	11,555	275	27.6	26,806	\$10.907	\$18.32	3	\$13.92	61.25	42.31	1.73	20.85	
MARC	Wash/Balt	\$15.054	2,039	55		2,702	\$7.383	\$12.48	4	\$14.00					
Tri-Co Rail	Miami/FL/Laud		0.495	20		0.291	\$0.000								
Metre	Chicago	\$288.563	11,482	391	31.0	29,885	\$23.390	\$15.86	3	\$18.54	87.87	45.81	1.78	29.81	
C & NW	Chicago	\$88.245	11,499	331	32.8	23,231	\$7.500	\$15.33	4		32.87	32.70	1.27	4.17	
Burlington No	Chicago	\$32.940	3,981	163	34.7	12,988	\$8.315				39.84	35.85	1.28	12.12	
No Indiana	Chicago	\$15.885	1,881	42		2,835	\$8.418								
CelTrain	San Jose/San Francisco	\$19.748	2,457	67	32.5	5,633	\$8.037	\$25.97	3	\$14.19	72.77	47.58	0.32	1.30	
CalTrans CR	Los Angeles		0.341	18		0.284		\$18.31	4						

See attached references

ATTACHMENT A-3. COST, LABOR PRODUCTIVITY, & PHYSICAL CHARACTER OF COMMUTER RAIL PROPERTIES

Transit Property	City	Key Dates Date end/or electrification	Vehicle Size			Total Cap	Diesel/Elec	One-Way Route-Miles			Track Miles	1,000 Veh-Mil per Track Mile	Stations			CBD Operations			Other Street Ops
			Length (Feet)	Width (Feet)	Artic Veh?			Saats	Total	Sub way			Sur face	Aerial	Maint Fadi	Street	Mall	Sub way	
COMMUTER RAIL																			
MBTA	Boston	1905 Electrified service begins 1987 Electrification from Hicksville to Ronkonkoma	85.3	10		75 < - Dbl Deck	Diesel	264.6				459.7	28.74	99	0				
LIRR	New York	1900 Hillside maintenance facil opens 1908 Electrified service begins 1984 Electrification from North White Plains to Brewster	75	10	74	254 Both	Both	311.7				701.1	81.39	134	2	4			
Metro North	New York	1925 Electrified service begins					Both	288.0				756.5	48.33	105	1	7			
SIRTOA	Staten Island	1930 Electrified service begins					Elec	14.3				28.8	73.04	22	0	1			
NJ Transit	New Jersey	1984 Some lines converted to 25,000 volt/60 hz AC					Both	398.7				799.2	42.77	153	1	18			
SEPTA	Philadelphia	1913 Electrified service begins 1985 Connection of ex-Pennsy and Reading lines in Center City					Elec	207.8				858.5	17.55	181	2	3			
MARC	Wash/Balt	Electrified service begins					Both								0				
Tri-Co Rail	Miami/Ft Laud	1936 1988	85	9.8		162	Diesel									1			
Metra	Chicago	1903 Rock Island lines to LaSalle St station 1926 Metre Electric (Ill Central) electrified	85	10.5		158	Both	208.5				520.3	22.07	121	1				
C & NW	Chicago	1977 Metre Electric Extended to University Park					Diesel	154.7				402.0	28.80	62	0	2			
Burlington No	Chicago	Electrified service begins					Diesel	37.5				144.0	27.51	27	0	2			
No Indiana	Chicago						Elec							0	0				
CalTrain	San Jose/ San Francisco						Diesel	48.9				93.8	28.19	28	0	2			
CalTrans CR	Los Angeles						Diesel								0				

See attached references

ATTACHMENT A-3: COST, LABOR PRODUCTIVITY, & PHYSICAL CHARACTER OF COMMUTER RAIL PROPERTIES

Transit Property	City	Organizational structure Relationship to other governmental entities	Vehicle Staffing	Significant Sophisticated Technology	Type of Platforms
COMMUTER RAIL					
MBTA	Boston	Multi-model transit agency Operated under contract by Amtrak	Engineer/Conductor & ticket collectors		Low
LIRR	New York	MTA assumes financial planning role	Engineer/Conductor & ticket collectors Ticket vending machines at some stations	Automatic Speed Control In some locations	High @ South Ste, Back Bay, Providence High in electrified territory
Metro North	New York	MTA assumes financial planning role	Engineer/Conductor & ticket collectors Ticket vending machines at some stations		High in electrified territory
SIRTOA	Staten Island	MTA assumes financial planning role	Engineer/Conductor & ticket collectors		
NJ Transit	New Jersey	Operating unit of NJ Transit, a statewide agency	Engineer/Conductor & ticket collectors Ticket vending machines at some stations		High
SEPTA	Philadelphia	Multi-model transit agency Some trackage owned and maintained by Amtrak	Engineer/Conductor & ticket collectors Ticket vending machines at some stations		High in 3 CBD sta, Trenton, Airport, No Phile others low
MARC	Wash/Balt	Model administration within state DOT Some trackage owned and maintained by Amtrak	Engineer/Conductor & ticket collectors		High on Amtrak line others low
Tri-Co Rail	Miami/Ft Laud	Multi-model transit agency	Engineer & firemen/Conductor & ticket collectors Ticket vending machines at some stations		Low
Metre	Chicago	One of three "service boards" within RTA Ind Milwaukee Rd, Heitgera Corridor, Norfolk South Metre Electric, No Indiana (Illinois portion)	Engineer & firemen/conductor & ticket collectors Engineer & firemen/conductor & ticket collectors Engineer & firemen/conductor on Metre Electric	AFC on Metre Electric	High et Metre Electric stations, others low
C & NW	Chicago	Center providing service to Metre	Engineer & firemen/conductor & ticket collectors		Low
Burlington No	Chicago	Center providing service to Metre	Engineer & firemen/conductor & ticket collectors		Low
No Indiana	Chicago	Agency funded by State of Indiana Ind Indiana portion only, Ill portion in "Metre"	Engineer/Conductor & ticket collectors		High et CBD sta, others low
CalTrain	San Jose/ San Francisco	Operating unit within California Department of Transportation	Engineer & firemen/conductor & ticket collectors		Low
CalTrans CR	Los Angeles	Operating unit within California Department of Transportation Operated under contract by Amtrak	Engineer & firemen/conductor & ticket collectors		Low

See attached references

Source:

All data, except for the following, from "National Urban Mass Transportation Statistics: 1989 Section 15 Annual Report", U.S. Urban Mass Transportation Administration, November 1990:

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- Fringes excluded: guarantee time, free transportation for employee or dependents, uniforms, sick leave, holidays, vacations, health and welfare insurance, employer pension contribution.
- Age of fixed plant: published histories of transit systems
- Vehicle size: published histories of transit systems, manufacturers specifications
- WMATA route-miles: WMATA, Standard Coding and Stationing Manual, January 1977
- Stations, by type: some data from transit system maps
- CBD, other street operations: observation
- Agency status: documentation from transit systems, published histories
- Vehicle staffing: observation
- Significant sophisticated technology: observation, published histories
- Type of platforms: observation

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3. Operator/Engineer
4. Conductor/Guard
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6. Part-Time
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9. Illinois Central operates with high level, all others with low level
10. Commuter rail ages: Locomotives/Trailer Coaches/Self-Propelled Coaches

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