



Florida's
Turnpike
Enterprise

Compensation Study: Toll Maintenance Classifications

Final Report

Center for Urban Transportation Research
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- Chesapeake Bay Bridge and Tunnel District
- Chesapeake Expressway
- Connector 2000 Association
- Delaware River Joint Toll Bridge Commission
- E-470 Public Highway Authority
- Halifax Dartmouth Bridge Commission
- Kansas Turnpike Authority
- Lee County DOT-TOLLS (LeeWay)
- Massachusetts Port Authority Tobin Bridge
- MTA Bridge and Tunnels
- New York State Bridge Authority
- New York State Thruway Authority
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- Northwest Parkway PHA
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Introduction

Florida's Turnpike Enterprise has expressed concern over the compensation levels of its toll equipment maintenance personnel. As toll collection technology advances and as the industry continues to evolve at a rapid pace, the need to maintain more sophisticated and complex equipment is becoming more pressing. This is occurring at a time when salaries in most state agencies have been static and the competition for technically competent personnel has increased and could cause the loss of the state's technically savvy employees to the higher paying private sector. Loss of highly-skilled technical employees in any organization causes operational disruption and has a negative impact on productivity. Although it is understood that salary is not the only factor in recruitment and retention, the relationship of the state compensation structure and salary rates to those sectors against which the Enterprise must compete for personnel needs to be more fully understood. In addition, it is important to understand the relationship of the Enterprise's compensation structure with that of other toll entities around the state and nation.

Florida's Turnpike Enterprise, in an effort to gain a more in-depth understanding of the issue, engaged the Center for Urban Transportation Research (CUTR) at the University of South Florida to conduct a compensation study for its toll equipment maintenance personnel classifications. The study is intended to be used by the Toll Operations Division as a basis to make recommendations to the agency's leadership on the appropriateness of the levels and structure of compensation for these positions.

The purpose of this study was to examine the recent attrition trends for a group of toll maintenance technical and supervisory positions at the Enterprise, identify the sectors with which they must compete for technically experienced personnel, and compare the salaries in those sectors with current Turnpike Enterprise compensation levels along with a comparison to other toll entities in North America.

Turnpike Enterprise Background

Florida's Turnpike Enterprise owns and operates a 450-mile system of limited-access toll highways. Its Turnpike mainline passes through 11 counties from North Miami to a junction with Interstate 75 in north central Florida. The Enterprise maintains 1,184 lanes of toll collection system equipment on 791 traffic lanes. In the past 15 years, the organization has made substantial investment in electronic toll collection (ETC) equipment.

The Turnpike Enterprise's toll collection equipment consists of a computerized toll collection system integrating toll plazas, a toll data center, maintenance center, regional toll offices located throughout the state of Florida, and toll operations headquarters offices. The mainline Turnpike is divided into two systems of toll collections: the ticket system and the coin system. On the northern and southern urban portions of the

Turnpike Mainline in Orlando and Miami, tolls are paid through the collection of cash and modern, automated equipment. Along the center portion of the mainline Turnpike, from West Palm Beach to Kissimmee, tolls are collected at eight interchanges by issuing tickets and collecting money.

Florida's Turnpike Enterprise is ranked third nationally in gross revenue, collecting over \$521 million in toll revenue during FY 2004, representing an increase of over 15 percent from FY 2003. The Enterprise processed more than 500 million annual transactions while serving more than 1.5 million customers. With projections indicating that annual toll revenue will exceed \$700 million by 2010, the maintenance of the Turnpike Enterprise's assets (infrastructure and equipment) becomes extremely important in protecting the interests of the organization.

More emphasis is being placed on the electronic toll collection technology SunPass®. The Enterprise has established a goal of increasing the percent of toll transactions using electronic toll collection (ETC) from just over 50 percent currently, to 75 percent by 2008. Therefore, maintenance of this important and expanding system becomes a critical element in improving the efficiency of toll collection operations.



Technical Expertise

The Turnpike Enterprise uses various electronic and electro-mechanical equipment at its toll plazas, ranging from relatively technologically old coin machines to the latest SunPass® technology. Proper operation of that equipment is crucial in ensuring a consistent and predictable revenue stream, while maintenance of toll equipment requires knowledgeable, highly skilled technical personnel. The Enterprise's increasing reliance on the more complicated electronic toll collection equipment, as more transactions are being handled by SunPass® technology, requires not only retaining the current technical personnel, but also designing an effective recruitment environment that can attract technical talent to the organization.

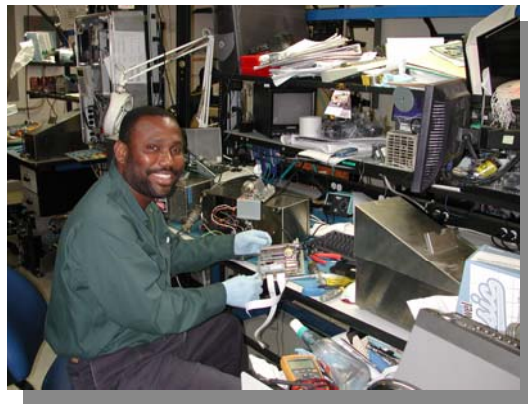
Paying a competitive salary is fundamental in recruiting and retaining highly skilled technical personnel and regular benchmarking against the market is important in understanding how an organization's salary compares to the competition. Florida's Turnpike Enterprise engaged CUTR to perform the analysis of its compensation structure including a comparison to similar job classifications in other government and private sectors and other toll agencies. After meeting with Turnpike Enterprise designees, the following six jobs were identified to be included in the study:



1. Toll Equipment Technician
2. SunPass® Technician
3. Toll Systems Technician
4. Toll Field Technician Supervisor
5. Regional Toll Technician Supervisor
6. Toll Technical Service Manager

Subsequently, the position of Toll Technical Service Manager was dropped from the analysis since that position was vacant during the conduct of the study. The study concentrated on the remaining five positions. The first three positions (Toll Equipment Technician, SunPass® Technician, and Toll Systems Technician) are technical positions. They fall into the State of Florida's broad classification of "Toll Equipment Technicians" and carry an annual salary within the range from \$20,850.18 to \$52,126.10. The last two positions (Field Technician Supervisor and Regional Toll Technician Supervisor) are supervisory positions. They are broadly classified as "Electronic Technicians" and carry an annual salary range from \$24,773.06 to \$61,932.78. The full descriptions of the positions are included in Appendix A.

In addition to cash compensation, the Turnpike Enterprise offers a state pension and health benefits, as well as overtime pay for non-supervisory positions. Fringe benefits equate to a 34 percent addition to the cash compensation.





Approach

In order to perform the analysis and assess how the Turnpike Enterprise's pay compares to the industry benchmark, CUTR reviewed the appropriateness of several commercial salary surveys. The data collection process also included meetings with the Turnpike Enterprise's technical personnel and discussions with Human Resources (HR) personnel. CUTR researchers also searched various employment websites and performed a comparison with advertised position openings whenever these comparisons were appropriate and relevant.

Data Collection

The Enterprise's HR department provided CUTR with detailed job descriptions, salaries and tenure information for all employees in the positions that were studied. In addition, CUTR researchers conducted a series of interviews in Tampa and Broward County with technical and supervisory personnel in order to better understand the duties and responsibilities of the positions and the issues related to compensation. Field visits to the Sawgrass Expressway toll facility and the Central Repair Depot (CRD) in Broward County were conducted to give CUTR researchers a better overview of the Turnpike Enterprise's operations.

In addition to the Enterprise's compensation data, CUTR researchers obtained market salary data for comparison purposes. Two sources of market salary data were pursued for this analysis: large-scale commercial salary surveys, and a survey of toll agencies. Each survey type has its advantages. Commercial surveys are based on a large number of observations and their estimates are usually highly reliable. Specialized industry surveys (like the survey of toll agencies), on the other hand, are based on a smaller pool of data, but can be more relevant for comparison in that industry. Recognizing that the toll industry is rather specific in its operations and types of jobs, CUTR developed a survey of toll agencies in order to capture the compensation levels and schemes used for toll industry technical personnel. The survey was distributed through the International Bridge, Tunnel & Turnpike Association (IBTTA) to its 70 members in North America.

For the commercial salary data, CUTR identified the salary survey provided by the Economic Research Institute (ERI) as an appropriate data source for this analysis. The Economic Research Institute provides compensation, benefits and human resource research for multiple positions and geographic areas. ERI conducts surveys, extracts compensation data from publicly filed government records, and collects all available salary and cost of living data.

The analysis for this report uses The Salary Assessor, ERI's software and database that provides a detailed pay overview and analysis for over 5,700 position titles in 298 U.S. and Canadian metropolitan areas. The data are collected and compiled from numerous



available published wage and salary survey sources and are presented in the form of salary means and medians. The use of multiple surveys for compiling the data provides thousands of observations for each position title and ensures a high reliability of compensation statistics.

Estimates may also be adjusted for salary planning date, metropolitan area, industry, and company size. The Salary Assessor software and database include reliability statistics as well as position descriptions and industry codes for ease of job matching.

Composite Positions

Prior to the interviews with Turnpike Enterprise technical personnel, CUTR researchers reviewed all 5,790 position titles listed in the ERI database and selected 20 that were deemed closest to the study positions based on the job descriptions and requirements.

After interviewing the Enterprise technicians and supervisors, it became clear that their scope of responsibilities is very wide and requires various technical skills and knowledge from mechanical and electromechanical to electronic and Radio Frequency (RF) equipment, computer hardware and software, fiber optics, and networking. After the interviews, CUTR researchers reviewed the initial list of selected positions and eliminated some of them and added others from the ERI database.

The following individual ERI positions were used to construct The Turnpike Enterprise's composite positions:

1. Electronics Technician
2. Field Service Technician
3. Instrument Technician
4. Test Technician
5. WAN/LAN Technician
6. Communications Technician
7. Computer Equipment Repairer
8. Electronic Equipment Repairer
9. Field Service Supervisor
10. Coin Machine Service Repairer
11. Radio Mechanic

No single position in the ERI database matched the scope of work performed by the Turnpike Enterprise's toll equipment maintenance personnel. To overcome this obstacle while attempting to perform a proper comparison, CUTR created "composite positions" for the five study job titles. The composite positions consist of a list of ERI position titles that are weighted based on their relevance to the Turnpike Enterprise's five technical positions. A salary for the composite positions was derived by applying the weights to



the reported salaries. These composite position salaries were used for the comparison to the Turnpike Enterprise's salaries. The five composite positions are described below:

Composite Positions

1. TOLL EQUIPMENT TECHNICIAN	Job Mix Percentage
Field Service Technician	40.0%
Instrument Technician	13.4%
Computer Equipment Repairer	13.3%
Electronic Equipment Repairer	13.3%
Communications Technician	5.0%
Electronics Mechanic	5.0%
Radio Mechanic	5.0%
Coin Machine Service Repairer	5.0%
	100.0%
2. SUNPASS TECHNICIAN	Job Mix Percentage
Electronics Technician	30.0%
WAN/LAN Technician	10.0%
Communications Technician	20.0%
Electronic Equipment Repairer	10.0%
Electronics Mechanic	20.0%
Radio Mechanic	10.0%
	100.0%
3. TOLL SYSTEMS TECHNICIAN	Job Mix Percentage
Electronics Technician	35.0%
Test Technician	10.0%
WAN/LAN Technician	10.0%
Communications Technician	22.5%
Electronics Mechanic	22.5%
	100.0%
4. TOLL FIELD TECHNICIAN SUPERVISOR	Job Mix Percentage
Field Services Supervisor	50.0%
Electronics Mechanic	25.0%
Communications Technician	25.0%
	100.0%
5. REGIONAL TOLL TECHNICIAN SUPERVISOR	Job Mix Percentage
Field Services Supervisor	100.0%



The descriptions of each of the ERI positions, including job responsibilities and minimum requirements, are presented in Appendix B. Note that according to the ERI descriptions for Communications Technician and Electronics Mechanic indicate identical types of work with the same set of duties. However, those two position titles were kept separate and not aggregated under one title when the composite positions were constructed in order to reflect the variety of tasks performed by the Turnpike Enterprise's toll equipment maintenance employees. The composite positions are summarized in a matrix form and presented in Table 1.

Table 1 – Composite Positions Summary

Job Responsibilities (%) Based on Job Descriptions					
	Toll Equipment Technician	SunPass Technician	Toll Systems Technician	Toll Field Technician Supervisor	Regional Toll Technician Supervisor
Electronics Technician		30.0%	35.0%		
Field Service Technician	40.0%				
Instrument Technician	13.4%				
Test Technician			10.0%		
WAN/LAN Technician		10.0%	10.0%		
Communications Technician	5.0%	20.0%	22.5%	25.0%	
Computer Equipment Repairer	13.3%				
Electronic Equipment Repairer	13.3%	10.0%			
Field Service Supervisor				50.0%	100.0%
Coin Machine Service Repairer	5.0%				
Electronics Mechanic	5.0%	20.0%	22.5%	25.0%	
Radio Mechanic	5.0%	10.0%			

Although the exact degree of reliability of the salaries for the composite positions is not known, the approximate magnitude of reliability will not exceed that of the ERI data for the individual positions used. The estimates of ERI positions are based on thousands of observations, making them highly reliable. ERI's overall results are drawn from multiple wages surveys and are fairly accurate at representing a true weighted average of the national mean salary. The U.S. salary data for the ERI classifications used to construct the Turnpike Enterprise's composite positions are presented in Table 2 along with the reliability statistics.



Table 2 – U.S. Salary Data for Selected Position Titles

Data as of June 1, 2005

ERI Position	U.S. Data					
	Annual Salary			Reliability Statistics		
	10-th Percentile	Mean	90-th Percentile	OBS*	CSE**	PSE***
Electronics Technician	36,491	43,610	53,234	181,550	0.4%	1.7%
Field Service Technician	31,865	37,670	45,352	23,640	0.8%	4.5%
Instrument Technician	39,271	46,914	57,290	181,550	0.4%	1.7%
Test Technician	40,038	47,270	56,985	361,240	0.4%	1.2%
WAN/LAN Technician	38,314	45,777	55,894	193,780	0.5%	2.2%
Communications Technician	41,970	50,122	61,227	142,910	0.8%	2.3%
Computer Equipment Repairer	29,882	35,757	43,593	142,910	0.8%	2.3%
Electronic Equipment Repairer	30,053	35,959	43,842	6,320	2.1%	8.2%
Field Services Supervisor	52,448	63,318	78,422	25,130	2.3%	6.1%
Coin Machine Service Repairer	24,271	28,097	32,877	35,540	0.8%	2.8%
Electronics Mechanic	41,970	50,122	61,227	142,910	0.8%	2.3%
Radio Mechanic	30,687	37,154	45,884	6,320	2.1%	8.2%

Note: * Number of observations
 ** Compensation Standard Error – reflects variability of the salary
 *** Populations Standard Error – reflects variability of the sample size

The standard errors shown may be considered as the maximum for the ERI database. Adding additional observations for each position classification or combining the classifications to create a weighted composite average can only increase the reliability of the estimates.



Toll System Support and Maintenance Workforce

CUTR obtained employee information from the Turnpike Enterprise including the salaries and tenure of employees in all five classifications analyzed for this study. The data presented here and in subsequent comparisons were valid on March 31, 2005. In addition, turnover data was provided for incumbents having held positions in any of the classifications for a 12 month period. The Enterprise also relies on contractors to provide some toll equipment maintenance. These contract personnel are used mainly for the least technically rigorous positions, with some exceptions. A review of the compensation levels for the contracted positions was outside the scope of this study.

This study was also limited to the Toll System Support and Maintenance (TSSM) section, although the Toll Systems Engineering Group includes a few incumbents with the same job titles as those in this analysis. Within TSSM, as of March 31, 2005, the composition of the workforce and the vacancy rates are detailed in Table 3.

Table 3 – TSSM Positions and Vacancies

Classification	Number of Positions	Vacancies	Vacancy Rate as of March 31, 2005
Technical Services Manager	1	1	100.0%
Regional Toll Technician Supervisor	6	1	16.7%
Toll Field Technician Supervisor	9	1	11.1%
Toll Systems Technician	9	0	0.0%
SunPass Technician	6	0	0.0%
Toll Equipment Technician	50	3	6.0%
Total Enterprise TSSM	81	6	7.4%

As shown in Table 3, the vacancy rate for TSSM (not including contractor positions) was 7.4 percent. In the assessment of CUTR researchers, this rate is higher than a desirable rate. It is difficult to understand the relevance of the rate without the benefit of the vacancy rate for the entire organization and without having several years' worth of data.



Although the Enterprise does not systematically track turnover in the ranks of its technical personnel, such data, covering a limited period of time, became available and was used for this analysis. Employee turnover data, including the reasons for separation, were made available for the period of November 2003 to March 2005. In order to calculate an annual turnover rate, CUTR used the data provided for the 12 months of November 2003 to October 2004. These results are presented in Table 4.

Table 4 – Turnover in the Turnpike Enterprise’s Technical Staff
 (11/2003 – 11/2004)

Reason for Leaving	Number of In-house	Turnover (%)	Number of Contractors	Turnover (%)
More Money	6	7.4%	12	27.3%
Better Position			3	6.8%
Terminated	1	1.2%	7	15.9%
Retired	1	1.2%		
Medical or Family Problems	1	1.2%	2	4.5%
Other			11	25.0%
Total	9	11.1%	35	79.5%

The data show, that over the observed period of time TSSM experienced an overall turnover rate in excess of 11.0 percent in its in-house technical personnel. This number includes all the in-house employees leaving their jobs at the Enterprise for various reasons including termination, retirement, medical or family problems as well as employment at another company for better pay. Accounting only for the in-house employees that left for better pay results in a turnover of 7.4 percent. This number is consistent with the TSSM vacancy rate observed. This rate is of concern given that the Enterprise managers interviewed indicated that it takes, on average, 9 months on the job to train a technician up to 80.0 percent efficiency and 12 months up to 90-95 percent efficiency. Like the vacancy rate, turnover in excess of 11.0 percent annually could be an indicator of noncompetitive compensation and/or other work environment issues.

For the same period of time, the Enterprise experienced a much higher turnover in the ranks of its contractor employees. The overall turnover rate for contractor technicians was almost 80.0 percent; approximately two-thirds of this turnover was attributed to reasons other than pay (i.e. 27.3 percent left for higher pay).

CUTR reviewed the data on tenure and salary provided by the Enterprise. Table 5 illustrates the average tenure of incumbents within the five toll maintenance position classifications along with the average annual salary. Again, the statistics were valid on March 31, 2005.



Table 5 – TSSM Tenure and Average Annual Salary

Classification	Average Incumbent Tenure (FDOT) in Years	Average Annual Salary
Regional Toll Technician Supervisor	9.9	\$39,310.02
Toll Field Technician Supervisor	9.0	\$34,310.54
Toll Systems Technician	6.5	\$32,187.86
SunPass Technician	7.1	\$30,012.58
Toll Equipment Technician	6.1	\$28,272.25

Based on the data presented in Table 5, an expected progression of tenure at the Enterprise is indicated, with the exception of minor tenure differences between a SunPass[®] Technician and a Toll Systems Technician. The progression pattern appears to be normal and to indicate that the Enterprise's classifications prepare individuals to advance to the next level of responsibility.

Second, there seems to be a severe case of "salary compression" that exists across the five toll maintenance classifications (i.e., only minor differences/distinctions in salaries despite increasing responsibilities). The salary spread from Toll Equipment Technician to Regional Supervisor is only \$11,038, on average per annum. Perhaps even more significant is the \$2,123 annual average difference between the Toll Systems Technician and Toll Field Technician Supervisor salaries, given the Supervisor position's additional responsibilities, span of control, and ineligibility for overtime compensation as compared to the Toll Systems Technician.



Market Comparison

Using national and regional salary data from the ERI database, CUTR researchers estimated the average salary for each of the five Turnpike Enterprise's composite positions. The resulting salary data are presented in terms of national average and the averages of four metropolitan statistical areas (MSA) in Florida: Miami, Orlando, Tampa, and Fort Lauderdale. These MSAs were chosen since a large portion of the Enterprise's operations are located in these areas. Table 6 presents the comparison of the Enterprise's average salary with the national and regional averages for the five positions of interest.

Table 6 – Market Comparison of the Turnpike Enterprise's Compensation

Position	Market Annual Salary							Enterprise Mean Annual Salary	Enterprise Salary With 3.6% Increase
	U.S. Data			Florida Data					
	10%	Mean	90%	Miami	Orlando	Tampa	Ft. Lauderdale		
Toll Equipment Technician	\$32,925	\$39,167	\$47,507	\$37,916	\$36,854	\$36,242	\$38,756	\$28,272	\$29,290
SunPass Technician	\$37,641	\$45,021	\$55,023	\$44,136	\$42,876	\$42,246	\$45,069	\$30,013	\$31,093
Toll Systems Technician	\$39,494	\$47,123	\$57,472	\$46,359	\$45,104	\$44,376	\$47,323	\$32,188	\$33,347
Toll Field Technician Supervisor	\$47,209	\$56,720	\$69,825	\$56,832	\$55,232	\$54,644	\$57,982	\$34,311	\$35,546
Regional Toll Technician Supervisor	\$52,448	\$63,318	\$78,422	\$63,914	\$62,164	\$61,599	\$65,176	\$39,310	\$40,725

The table compares the Enterprise's average salaries before and after a scheduled 3.6 percent salary adjustment to U.S. averages and the 10th and 90th percentiles in addition to the regionally adjusted averages for Florida's metropolitan areas.

The comparison shows that after accounting for the scheduled 3.6 percent salary increase for Enterprise employees this year, the Turnpike Enterprise's salaries are significantly lower than the average market compensation nationwide and in the chosen Florida MSAs. The Turnpike Enterprise's technical personnel are paid less than the lowest-paid 10 percent of technicians in the same classifications nationwide.

For comparison purposes, the Turnpike Enterprise's salaries can be expressed as percentage of market salary (see Table 7). Looking at salary differences in terms of percentages allows comparison between positions with different levels of salary.



Table 7 – Turnpike Enterprise’s Base Compensation as a Percentage of Market Salary

Position	Turnpike Enterprise Salary Compared to:					
	U.S. Salary (%)		Regional Salary (%)			
	Lowest 10%	Mean	Miami	Orlando	Tampa	Ft. Lauderdale
Toll Equipment Technician	85.9%	72.2%	74.6%	76.7%	78.0%	72.9%
SunPass Technician	79.7%	66.7%	68.0%	70.0%	71.0%	66.6%
Toll Systems Technician	81.5%	68.3%	69.4%	71.4%	72.5%	68.0%
Toll Field Technician Supervisor	72.7%	60.5%	60.4%	62.1%	62.8%	59.2%
Regional Toll Technician Supervisor	75.0%	62.1%	61.5%	63.2%	63.8%	60.3%
Average	78.9%	65.9%	66.8%	68.7%	69.6%	65.4%

On average, the Enterprise pays 65.9 percent of the U.S. average salary for the analyzed five technical jobs, and 78.9 percent of the lowest paid 10 percent of technicians in similar classifications (i.e. 21.1 percent under market compared to the lowest-paid technicians). This means that less than 10 percent of technicians in the market receive pay that is lower than the Turnpike Enterprise’s pay, while over 90 percent receive higher pay. The lack of regional adjustments in the Turnpike Enterprise’s compensation plan leads to differences in salaries expressed as a percentage of market average in different regions. For example, the Turnpike Enterprise’s toll equipment technician is paid 78.0 percent of the market average in the Tampa region, but due to differences in the average salary and cost of living between regions, the same Enterprise salary translates to 72.9 percent of market salary in Fort Lauderdale.

Another way of comparing compensation to the market average in relative terms is by comparing the percentages above or below market salaries. The resulting percentages are the inverses to the numbers presented in Table 7 and may be more meaningful. Table 8 presents the Turnpike Enterprise’s salaries expressed as a percentage below market salary.



**Table 8 - Turnpike Enterprise's Compensation
 as a Percentage Below Market Salary**

Position	Percentage Under Market - Enterprise Salaries					
	U.S. Comparison		Regional Comparison			
	Lowest 10%	Mean	Miami	Orlando	Tampa	Ft. Lauderdale
Toll Equipment Technician	14.1%	27.8%	25.4%	23.3%	22.0%	27.1%
With 3.6 % adjustment	11.0%	25.2%	22.8%	20.5%	19.2%	24.4%
SunPass Technician	20.3%	33.3%	32.0%	30.0%	29.0%	33.4%
With 3.6 % adjustment	17.4%	30.9%	29.6%	27.5%	26.4%	31.0%
Toll Systems Technician	18.5%	31.7%	30.6%	28.6%	27.5%	32.0%
With 3.6 % adjustment	15.6%	29.2%	28.1%	26.1%	24.9%	29.5%
Toll Field Technician Supervisor	27.3%	39.5%	39.6%	37.9%	37.2%	40.8%
With 3.6 % adjustment	24.7%	37.3%	37.5%	35.6%	34.9%	38.7%
Regional Toll Technician Supervisor	25.0%	37.9%	38.5%	36.8%	36.2%	39.7%
With 3.6 % adjustment	22.4%	35.7%	36.3%	34.5%	33.9%	37.5%

Note: Bold italic numbers represent percentage under the market salary for the Turnpike Enterprise after accounting for a scheduled 3.6 percent annual increase in salary.

The gap between the Turnpike Enterprise's salaries and the market average compensation is consistently greater for the supervisory positions compared to the technical positions across all examined Florida regions. For example, the salary of a SunPass[®] technician in Miami is 32.0 percent below the market while the salaries of Field Technician Supervisor and Regional Technician Supervisor in Miami are 39.6 percent and 38.5 percent, respectively, below market. This trend is found in all of the analyzed Florida MSAs as well as in the nationwide average salaries. Since the Turnpike Enterprise's increase in salary for supervisory positions is less than the average for the market (reflective of the salary compression noted earlier in the report), the salary gap between the Enterprise and the market is higher for supervisory positions than for technical positions.

Figure 1 shows the comparison of the Turnpike Enterprise's salaries to the average salaries in Florida MSAs. The Turnpike Enterprise's salaries for all five of the analyzed job titles are significantly lower than the average market salaries in all of the Florida regions.

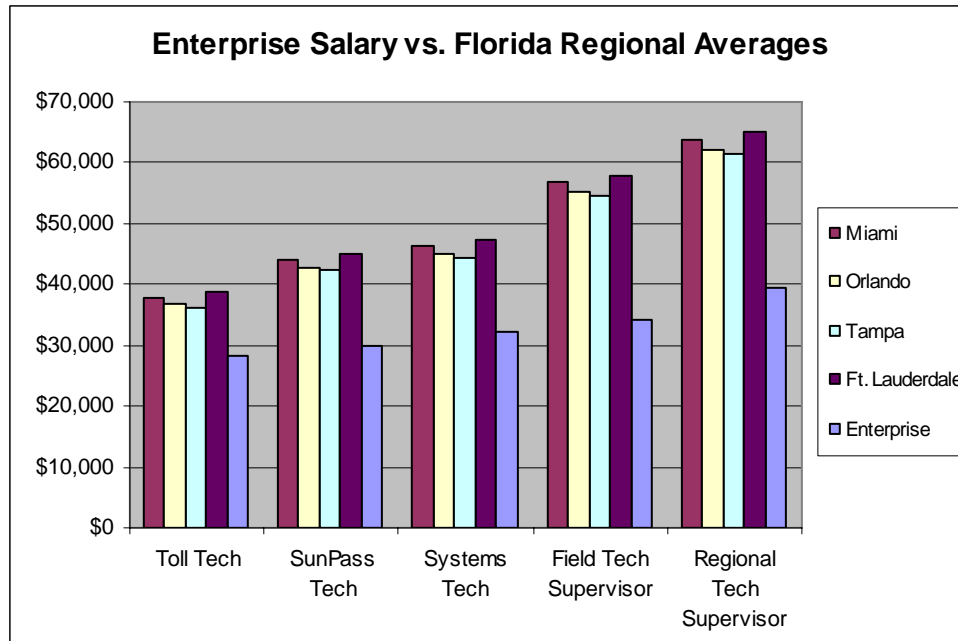


Figure 1 – Comparison of Enterprise Salaries with Regional Averages

Of the analyzed Florida regions, Ft. Lauderdale has the highest average salary for technical personnel, while Tampa has the lowest. This can be a reflection of the differences in the cost of living between the regions (e.g. Ft. Lauderdale has the highest cost of living among the analyzed MSAs). Since the Enterprise provides no regional salary adjustment, it follows that the largest gap between the Turnpike Enterprise’s salaries and regional average salaries for technical personnel exists in Ft. Lauderdale. This gap is the smallest for the employees in Tampa.

The Turnpike Enterprise’s salaries are also lagging significantly in all five classifications compared to U.S. averages. Figure 2 shows the salary comparisons between Enterprise and U.S. averages.

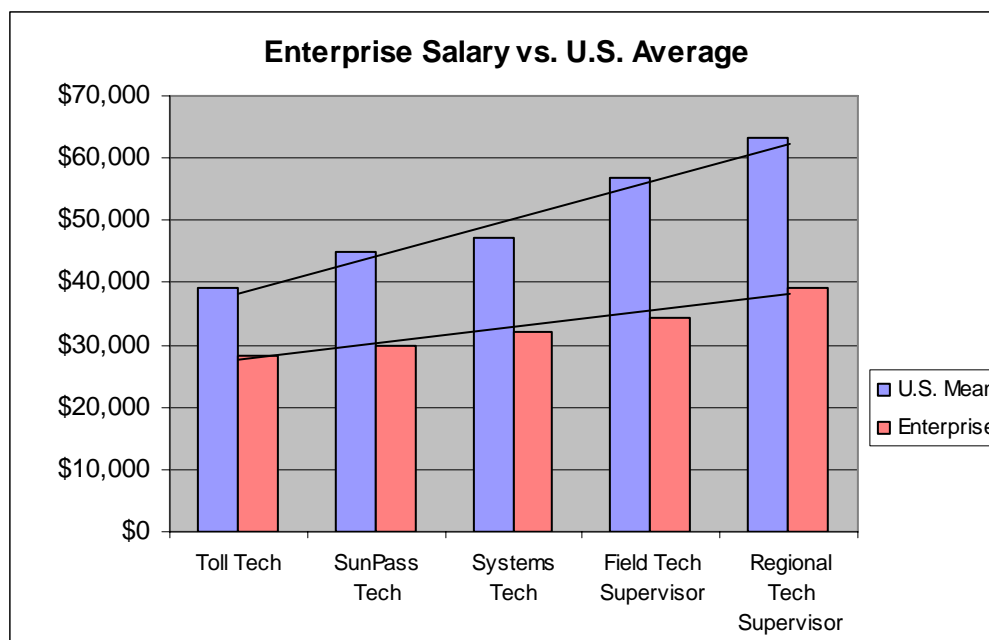


Figure 2 – Enterprise vs. U.S. Salary Comparison

Not only are the Turnpike Enterprise's average salaries lower for the analyzed positions compared to the national average salaries, the salaries do not progress as much when one moves to a higher classification. Figure 2 displays the trend lines of growth in salary from a lower-level position to a higher-level one. It can be seen that the progression trend line attached to a national average salary is steeper than the one attached to an Enterprise salary. This means that, on average, a Turnpike employee moving to a higher-level technical position can expect a lower raise in salary than an average employee in the U.S. This can explain the previous observation that the higher the position, the larger the gap is between the Turnpike Enterprise's compensations and the market average salaries. These data also validate CUTR's earlier stated observations on salary compression.

A side-by side comparison of salary progression from Toll Technician to Regional Technician Supervisor between the Enterprise and the market (U.S. average and Florida MSAs) is presented in Figure 3.

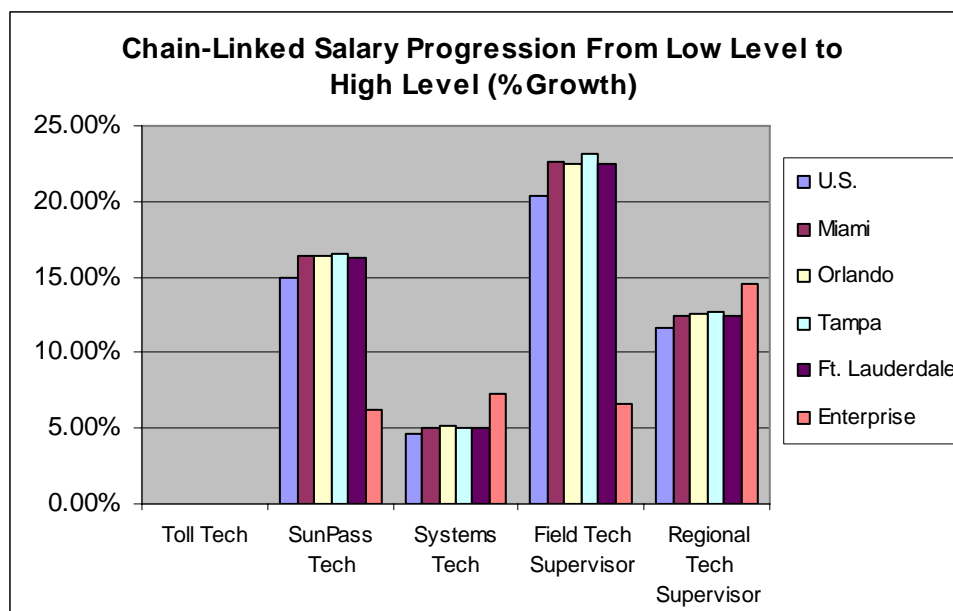


Figure 3 – Comparison of Salary Progression

The graph in Figure 3 compares percentage increases in salaries associated with promotion in the studied toll maintenance classifications, from the entry-level position of Toll Technician to the highest paid position of Regional Technician Supervisor. The U.S. average increase in salary is consistently lower than the Florida MSAs average increase. However, the Enterprise's salary progression falls significantly below the others' when promoting Toll Technicians to Sunpass Technicians and Systems Technicians to Field Technician Supervisors, but it exceeds both national and Florida averages when promoting Sunpass Technicians to Systems Technicians and Field Technician Supervisors to Regional Technician Supervisors. Irregardless, the Enterprise's salary progression across the board is lower in absolute terms compared to U.S. and Florida averages.

An important observation is that the Enterprise offers smaller salary increases for promotion into supervisory positions compared to national and Florida MSAs averages (see Table 9).

Table 9 - Salary Progression (Percentage Increase)

Positions	U.S.	Miami	Orlando	Tampa	Ft. Lauderdale	Enterprise
Toll Tech	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SunPass Tech	14.9%	16.4%	16.3%	16.6%	16.3%	6.2%
Systems Tech	4.7%	5.0%	5.2%	5.0%	5.0%	7.2%
Field Tech Supervisor	20.4%	22.6%	22.5%	23.1%	22.5%	6.6%
Regional Tech Supervisor	11.6%	12.5%	12.6%	12.7%	12.4%	14.6%



As Table 9 indicates, there is a 6.6 percent salary progression moving from a Systems Technician to a Field Technician Supervisor, while U.S. and Florida MSAs averages for that promotion exceed 20 percent. Further, although the Enterprise's percentage increase moving from Field Technician Supervisor to Regional Technician Supervisor exceeds U.S. and Florida MSAs averages, the combined percentage salary increase of both supervisory levels is significantly smaller than that of national and Florida MSAs averages, which, most importantly, suggests a potential serious problem for the Enterprise as its compensation scheme provides little incentive for technical personnel to advance to supervisory positions.



Toll Agency Survey

Since the toll industry is unique in the types and variety of equipment it uses, it requires technicians to have a rather unique set of skills. Therefore, in addition to the general salary comparison between the Turnpike Enterprise technicians and all other technicians in the market, CUTR also conducted salary comparisons with other toll agencies. While the ERI data do include salaries for public sector positions, the best comparison would be with a truly representative sample of North American toll entities. This exercise also helps to validate the findings of the Enterprise to ERI salary comparison.

In order to obtain salary data specific to the toll industry, CUTR researchers developed a salary survey that was distributed to 70 North American toll agencies through the International Bridge, Tunnel and Turnpike Association (IBBTA) on May 12, 2005.

The survey included questions regarding the number of technical personnel employed; whether toll equipment maintenance is performed by in-house staff or contractors; minimum, maximum and average salaries for each classification; types of benefits provided; number and types of toll lanes operated by the agency; and others. The full survey questionnaire is included in Appendix C.

CUTR received 15 responses (a 21.4 percent response rate) from different toll agencies in the U.S. and Canada. Many surveys were unable to be completed because the agencies that contract out equipment maintenance functions do not have access to the salary information of these technicians. Those that do have in-house technical personnel do not always have the same number of job titles or classifications (usually fewer) than the Enterprise. As a result, the statistical reliability of the data is rather limited and the results should be interpreted with this in mind.

There were several agencies responding to the survey that contracted out 100 percent of their toll equipment maintenance functions and, thus, were unable to provide any salary data. CUTR received responses from the following toll agencies and is grateful for their input:

- Chesapeake Bay Bridge and Tunnel District
- Chesapeake Expressway
- Connector 2000 Association
- Delaware River Joint Toll Bridge Commission
- E-470 Public Highway Authority
- Halifax Dartmouth Bridge Commission
- Kansas Turnpike Authority
- Lee County DOT-TOLLS (LeeWay)
- Massachusetts Port Authority Tobin Bridge
- MTA Bridge and Tunnels
- New York State Bridge Authority

- New York State Thruway Authority
- North Texas Tollway Authority
- Northwest Parkway PHA
- Pennsylvania Turnpike Commission

Six out of the 15 agencies that responded to the survey rely solely on in-house technical staff to maintain toll equipment. Five agencies contract out equipment maintenance functions, and four agencies use a combination of both in-house technicians and contractors. Most of the toll agencies that responded to the survey are relatively small in comparison to the Enterprise. Only six agencies—Kansas Turnpike Authority, MTA Bridges and Tunnels, North Texas Tollway Authority, New York State Thruway Authority, E-470 Public Highway Authority, and the Pennsylvania Turnpike Commission—operate in excess of a 100 toll lanes each (the largest of the agencies, NTTA, operates 434 lanes). Replies from those six agencies were identified by the Enterprise as the most relevant for comparison.



Toll Agency Salaries

CUTR compiled the limited data of toll agencies' salaries in terms of their averages for the purpose of comparing them with the Turnpike Enterprise's average salaries for each classification. The comparison is presented in Table 10. Since the agencies that provided the data are located in different regions of the U.S. and Canada, the salaries were adjusted for the regional differences in the cost of living. The adjustment was performed using the American Chamber of Commerce Researchers Association (ACCRA) cost of living indexes for the third quarter of 2004, using Orlando as the base region (all salaries are expressed in terms of Orlando equivalent).



Table 10 – Salary Comparison (IBTTA Members vs. Enterprise)

Position	Min	Adjusted IBTTA Average	Max	Enterprise	3.6 % Increase	Enterprise Minus Mean
Toll Tech	\$30,791	\$35,225	\$42,564	\$28,272	\$29,290	-\$6,953
Electronic Tech	\$30,964	\$35,882	\$41,853	\$30,013	\$31,093	-\$5,870
Systems Tech	\$34,232	\$43,886	\$49,460	\$32,188	\$33,347	-\$11,698
Field Tech Supervisor	\$37,374	\$48,816	\$55,678	\$34,311	\$35,546	-\$14,506
Regional Tech Supervisor	\$43,381	\$57,591	\$63,463	\$39,310	\$40,725	-\$18,281
Manager	\$67,935	\$75,223	\$92,368			

The last column in Table 10 presents the difference in average compensation of technical personnel at the Turnpike Enterprise and at other toll agencies. The data show that, even after accounting for the regional differences in the cost of living, an average Toll Technician at the Enterprise receives a salary that is almost \$7,000 (19.7%) less than an average technician in a similar classification at other toll agencies in North America. For the Regional Supervisor position, this gap in average salary increases to more than \$18,000 (30%) less. After adjusting for the scheduled 3.6 percent across-the-board increase, the Turnpike Enterprise's salaries still appear lower than the regionally adjusted average minimum salaries of other toll agencies.

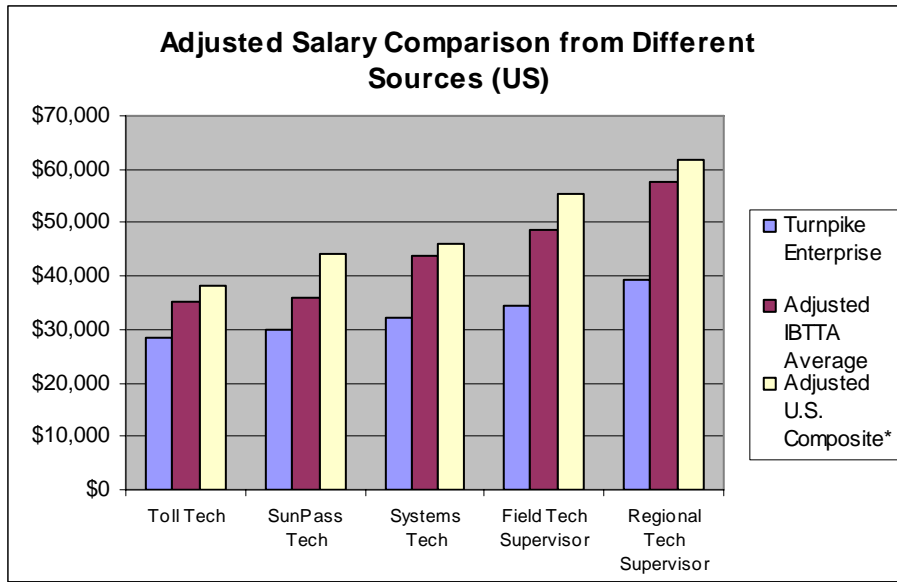
The comparison of the Turnpike Enterprise's salaries to both the target composite salaries (estimated by CUTR from ERI data) as well as the salaries of other toll agencies (provided by IBTTA members) is presented in Table 11.

Table 11 – Comparison of Adjusted Salaries Between Different Sources

Position	Turnpike Enterprise	Adjusted IBTTA Average	Adjusted U.S. Composite*
Toll Tech	\$28,272	\$35,225	\$38,267
SunPass Tech	\$30,013	\$35,882	\$43,985
Systems Tech	\$32,188	\$43,886	\$46,039
Field Tech Supervisor	\$34,311	\$48,816	\$55,415
Regional Tech Supervisor	\$39,310	\$57,591	\$61,862

* Orlando adjustment index: 1.0235

The IBTTA average salaries were adjusted to the Orlando equivalent while the U.S. composite salaries obtained from the ERI data represent the U.S. average salaries. For proper comparison, the U.S. composite salaries had to be adjusted to an Orlando equivalents as well. Since the Turnpike Enterprise's compensation has no regional differences, there is no need to adjust the Enterprise salaries to Orlando equivalents. For a visual comparison, the same data from Table 11 are presented in Figure 4.



* Orlando adjustment index: 1.0235

Figure 4 – Comparison of Regionally Adjusted Salaries

With all regional adjustments, this previously observed trend still persists: the Turnpike Enterprise's salaries are consistently below average in all technical classifications and the gap is larger for the higher-level positions.



Related Issues

In the process of analyzing the Enterprise's compensation levels and structure for different technical classifications, CUTR researchers identified some related issues. Those findings, briefly explained below, complement the comparative salary analysis and provide some clues for better understanding the essence of the issues associated with the Turnpike Enterprise's compensation.

- **Evolving to more electronic collection**

In the past years, the Enterprise has been aggressively pursuing the transition towards more electronic toll collection. Electronic collection allows collection of tolls without impeding the flow of traffic; it is convenient for the customers, and should result in lower transaction costs for the toll agency. Florida's Turnpike Enterprise is engaged in a SunPass[®] Challenge that involves opening new dedicated electronic collection (SunPass[®]) lanes, and converting numerous manual lanes into mixed use lanes (SunPass[®] and manual). The goal of the SunPass[®] Challenge is to open dedicated SunPass[®] lanes at every toll plaza.



As a result of the SunPass[®] Challenge program, ETC participation on the Turnpike system increased by over 24 percent in FY 2004 compared to FY 2003. Participation surpassed the 50.0 percent mark in April of 2004. The Turnpike Enterprise's goal of 50.0 percent SunPass[®] participation by December of 2004 was achieved eight months early. During FY 2004, the Enterprise implemented a "cash customer only" toll increase as well as an aggressive marketing campaign that encouraged Turnpike Enterprise customers to switch to SunPass[®]. The combined result was a dramatic increase in SunPass[®] participation that allowed the Enterprise to set a new ambitious participation goal: 75.0 percent SunPass[®] participation by FY 2008.

The Enterprise believes that improved SunPass[®] access is a key component to providing improved customer service to the Turnpike Enterprise's customers while ultimately reducing the costs of toll collection. Dedicated SunPass[®] lanes process up to 1,800 vehicles per hour, which is 300 percent more than manual toll lanes. The increased throughput at the toll plazas provided by SunPass[®] provides time savings to the customers by minimizing congestion at the toll plazas. To keep up with the increased demand for SunPass[®] lanes, the Enterprise completed the construction or conversion of numerous dedicated ETC lanes and ramps in FY 2004 on various toll facilities. A total of 38 dedicated SunPass[®] lanes have been added to the system at various toll plazas and interchanges through the end of the FY 2004.

Evolving towards a higher percentage of electronic toll collection places a higher demand on knowledgeable and skilled technical personnel required to install and maintain sophisticated hi-tech SunPass[®] equipment. A shift to more electronic toll

collection necessitates a shift in the skill set of equipment maintenance personnel, including knowledge of radio frequency (RF) equipment, computer hardware and software, fiber optic technologies, etc. Evolving towards the use of newer, more complicated SunPass[®] equipment requires maintenance staff that can grow with the business by staying abreast of new technologies and constantly acquiring new skills.

With the current compensation levels and structure it can become difficult for the Turnpike Enterprise to recruit and retain highly skilled and dedicated technical personnel. The Turnpike Enterprise's unfavorable salary comparison to the market, including other toll agencies, indicates a potential threat of losing the best technical talent to higher bidders. Based on the information obtained from interviewing Enterprise technical staff, most of the employees that left their positions did so to take higher-paying jobs at other companies. The current level of compensation and its progression could potentially negatively affect the implementation of SunPass[®] Challenge by not allowing the recruitment and retention of high caliber technical talent and jeopardizing the quality of equipment maintenance.

- **Positions are “revenue critical”**

Technical personnel are fundamental in keeping the toll equipment operational, and, thus, keeping the consistent flow of revenue to the toll agency. The Turnpike Enterprise's equipment maintenance employees ensure that lanes are open and that tolls are being collected properly. The compensation of these revenue-critical positions is significantly under the market average. According to the Turnpike Enterprise's technical staff, low salary negatively affects employee morale and can affect the quality of their work. This seems to be verified in the survey summary of attitudes of employees in the positions studied.



- **No career path for toll technical classifications**

All interviewed technicians emphasized their frustration about the lack of a clear career path for the technical classifications as well as the lack of merit-based raises. With no opportunity to be compensated as they become more proficient, technicians have few incentives to excel. Even advancing to a higher classification (promotion) does not provide a significant increase in salary. In fact, advancing to a supervisory position might result in a decrease in overall salary, as supervisors are not eligible to earn overtime pay. This could certainly negatively affect employee morale, work attitude and quality of work.

While the Enterprise encourages the employees to develop new skills, it does not provide a monetary reward for obtaining knowledge and/or certification. All SunPass[®] technicians are currently required to be fiber optics-certified, and the organization helps technical personnel to obtain the certification by providing the required training. In fact,

according to the Turnpike Enterprise's 2004 employee survey, almost 59 percent of the respondents were satisfied with the timeliness and appropriateness of the training they received.

The Turnpike Enterprise's 2004 employee survey (see Appendix D) indicated that 80 percent of the respondents were either somewhat or strongly dissatisfied with the Enterprise's effectiveness in recognizing and rewarding outstanding performance.

- **Many technicians rely on double incomes**

CUTR discovered, in the numerous interviews that were conducted, that many technicians have a second source of income. Many of the Turnpike Enterprise's technical staff are retired from the military or have a second job. Technicians admit that working a second job decreases their productivity at the Turnpike Enterprise. Very few can afford to live solely of the Turnpike Enterprise's salary. Anecdotally, the Enterprise seems to be heavily reliant on the pool of retired military for its technical staffing. As this workforce moves towards retirement, significant problems for the recruitment of technicians are certainly a potential.



- **Turnover seems higher than desired**

Regardless of the lower-than-average market salary and lack of progression, the turnover rate in the Turnpike Enterprise's ranks is not extremely high (the data for a one year period from 11/2003 to 11/2004 suggests that the in-house technical staff turnover, motivated by a higher pay, is 7.4 percent; an overall non-contractor employee turnover rate, including all other reasons, is 11.1 percent). This could be explained by the fact that most technicians rely on double incomes. Another explanation can be provided by a high job satisfaction of the technicians. The Turnpike Enterprise's recent employee survey indicated that, while most were very dissatisfied with the pay, employees were satisfied with their work.

The 2004 Enterprise employee survey showed that 87.5 percent of the respondents derived satisfaction from their work, and felt productive and effective, while the remaining 12.5 percent were somewhat dissatisfied; none were strongly dissatisfied. At the same time, the survey revealed that 90 percent of the respondents were either somewhat dissatisfied or strongly dissatisfied with how their pay reflected their responsibilities and performance, 10 percent were somewhat satisfied, and none were strongly satisfied with their pay.



- **Misunderstanding of advertised salary ranges**

The salary range for a Toll Equipment Technician is stated as \$20,850 to \$52,126. However, given the lack of an advancement mechanism, the advertised range can create an impression of potential salary progression. In practice the technician's actual salary does not progress towards the upper salary bound, but stays rather constant. The median salary of the "broad band" is \$36,488, while the median salary of an Enterprise Toll Equipment Technician is \$27,417.

- **Salary compression across the classifications studied**

As pointed out earlier in the report, the Turnpike Enterprise's compensation structure provides insignificant salary progression between the studied technical classifications. The average salary of a Regional Technician Supervisor (the highest-paid position of the five studied classifications) is only \$11,000 higher than the average salary of a Toll Equipment Technician (the lowest-paid position of the five). There are also insignificant differences in the average salaries of technical (Toll Tech, SunPass[®] Tech, Systems Tech) and supervisory classifications (Field Service Supervisor and Regional Supervisor).

- **Aging workforce**

Anecdotally, there seems to be a large number of Enterprise technical staff that are either retired (from the military) or nearing retirement age. The Enterprise did not furnish date of birth information for the incumbents in positions studied. Technicians that are a few years away from retirement attach high importance to State pension and benefits, and are less likely to quit because of dissatisfaction with their salary. However, when they retire, the Enterprise will face difficulties in recruiting younger employees out of colleges and technical schools. If unaltered, the Turnpike Enterprise's compensation scheme will be unattractive to younger employees that have more choices in terms of employment.



Conclusions

CUTR has concluded that, based on the market comparisons, turnover data, comparisons with other North American toll agencies, and employee survey data, the compensation levels of the five classifications studied are an issue and that an adjustment should be considered in the context of Enterprise-wide priorities and salary relationships.

Further, CUTR is also sensitive to the realities of the difficulties of making salary adjustments in the context of Florida's human resource system. Perhaps an adjustment that reflects a more realistic compensation for the toll technical positions could be done in conjunction with a certification or career path program, as briefly discussed in this report. Whatever the method, the case for an adjustment is compelling based on these study findings:

- The vacancy rate for all of TSSM (not including contractor positions) was 7.4 percent and the turnover rate was over 11.0% for the study period.
- There is clear salary compression across the five classifications (i.e., minor differences or distinctions in salaries for positions with increasing responsibilities). The salary spread from the Toll Equipment Technician to the Regional Technician Supervisor is only \$11,038 on average per annum. Perhaps even more significant is the slight \$2,123 annual average difference between the Toll Systems Technician and the Toll Field Technician Supervisor. This is significant not only because of the additional responsibilities and span of control associated with the supervisory position, but the Toll Field Technician Supervisor is not a position that is eligible for overtime, as is a Toll Systems Technician.
- On average, the Enterprise pays 65.9 percent of the U.S. average salary for the analyzed five technical jobs, and 78.9 percent of the lowest paid 10 percent technicians in similar classifications (i.e. 21.1 percent below market compared to the lowest-paid technicians). This means that less than 10 percent of technicians in the market receive pay that is lower than the Turnpike Enterprise's pay, while over 90 percent receive a higher salary.
- The gap between the Turnpike Enterprise's salary and the market average compensation is consistently higher for the supervisory positions compared to the technical positions across all examined Florida regions.
- With no regional salary adjustment, the largest gap between the Turnpike Enterprise's salary and regional average salary for technical personnel exists in Ft Lauderdale. This gap is the smallest for the employees in Tampa.



- Not only is the Turnpike Enterprise's average salary lower for every one of the analyzed positions compared to the national averages, the salaries do not progress as much when one moves to a higher classification.
- The Enterprise offers a significantly lower increase in salary when moving to the supervisory positions as compared to the U.S. and Florida averages. For example, the Turnpike Enterprise's increase in salary when moving from a Systems Technician to a Field Technician Supervisor position is 6.6 percent, while both the U.S. average and the average for Florida MSAs exceed 20.0 percent.
- Comparing the Enterprise to North American toll agencies responding to a survey, an average Toll Technician at the Enterprise receives a salary that is almost \$7,000 (19.7%) lower than an average salary of a technician in a similar classification. For the Regional Supervisor position, this gap in average salary increases to \$18,000 (30%) lower, or more. Even after adjusting for the scheduled 3.6 percent across-the-board increase, the Turnpike Enterprise's salaries still appear lower than the regionally adjusted average minimum salaries of other toll agencies that responded to the survey.
- The Turnpike Enterprise relies heavily on in-house technical personnel rather than contracted workforce: two thirds of Enterprise's technical staff are in-house technicians.
- Evolving towards a higher percentage of electronic toll collection places a higher demand on knowledgeable and skilled technical personnel required to install and maintain sophisticated hi-tech SunPass® equipment.
- CUTR also recommends a review of the contractor technicians. While the 11.0 percent turnover rate for Enterprise employees should be of concern, a turnover rate that exceeds 80.0 percent for the contracted workforce seems extraordinarily high.



Appendices



Appendix A: Description of the Turnpike Enterprise's Positions

1. Toll Equipment Technician

This position is primarily responsible for maintenance support for toll systems statewide. Requires the reading of electrical schematics, replacement of electronic and electromechanical parts to keep toll equipment in operating condition. Toll equipment technician is responsible for troubleshooting and repair of malfunctions in assemblies, subassemblies and components of toll systems. Performs on call, responds to callbacks and performs other duties as required.

Required knowledge/skills:

- Ability to learn operation of toll collection equipment.
- Skill to repair basic electronic malfunctions and ability to learn complex electronic malfunction repair techniques.
- Ability to enter accurate and timely data into a maintenance online management system by submitting shop, maintenance and preventive action forms.
- Ability to maintain an established schedule and the knowledge of electronic equipment maintenance.
- Sufficient knowledge of systems to detect pending malfunctions.
- Ability to relay information to plaza and equipment technician supervisors.
- Ability to work independently.
- Knowledge of basic electronic principles and the ability to learn complex electronic equipment and circuitry.
- Knowledge of disassembly procedures.
- Knowledge in electronic theory and practical applications.
- Ability to apply knowledge of computer applications.
- Ability to lift equipment weighting 50 pounds.

2. SunPass® Technician

The position is the second echelon of maintenance support for toll systems statewide. It requires the reading of electrical schematics and the replacement of electronic and electromechanical parts to place the toll equipment in operating condition. The incumbent troubleshoots and repairs malfunctions in assemblies, subassemblies and components of the toll system. Coordinates with the systems technicians at the Central Repair Depot (CRD) to troubleshoot malfunctions beyond the equipment technician's capability or experience to repair. Keeps the CRD advised on the status of spares and repair parts through the use of Maintenance On-Line Management Systems (MOMS). The incumbent responds to callbacks and performs other duties as required.



Required knowledge/skills:

- Determine equipment malfunctions to locate the source of trouble, make repair and adjustments (25 percent).
- Check SunPass® lanes for daily tag file. Inspect SunPass® equipment for damage or malfunctioning components. Adjust, repair or replace any malfunctioning components. Document all work performed on equipment in MOMS and manual log (20 percent).
- Perform preventive maintenance including frequent inspection of basic elements of the equipment, cleaning switches, connectors, relay contacts, adjusting printers and other equipment (15 percent).
- Access MOMS for completion of MAFs, PAFs and SAFs as required (15 percent).
- Interpret wiring schematics for use in troubleshooting, replacement of parts and modification of equipment circuitry (10 percent).
- Coordinate with the CRD system technicians to troubleshoot significant malfunctions which are beyond the equipment technician's capability to isolate (5 percent).
- Remove damaged or on site non-repairable equipment for shipping to the bench repair facility of the CRD, install temporary or permanent replacement equipment as required (5 percent).
- Other duties as required (5 percent).

3. Systems Technician

Systems Technician is responsible for diagnosing, testing and repairing assemblies, subassemblies and components of the toll system beyond the expertise of toll equipment technicians. Incumbent provides 24-hour support to field technicians, performs bench repairs of components and participates in training of field technicians.

Required knowledge/skills:

- Ability to read and interpret complex schematics, parts/wiring diagrams.
- Ability to establish test procedures.
- Ability to follow written and verbal instructions.
- Skilled in the use of volt/amp meters, oscilloscopes frequency counters, network analyzers and basic hand tools.
- Ability to recognize components.
- Ability to read, write and interpret technical English.
- Knowledge of a maintenance management system is preferred.
- Knowledge of computer network principles and computer repair.
- Knowledge of electronic theory and practical applications from a college or technical school.
- Ability to lift 50 pounds.



4. Toll Field Technician Supervisor

- Plans and schedules work flow and work shifts, establishing priorities for technicians and adjusts schedules as necessary (20 percent).
- Keeps time, equipment, personnel, training and other records and performs other administrative functions as necessary for efficient management of technicians (15 percent).
- Assists and advises the technicians in troubleshooting and repair of comprehensive equipment malfunctions; trains technicians on technical and administrative functions. Installs new equipment in plazas and in lanes (15 percent).
- Supervises the performance and records, keeping of preventative maintenance and the ordering of required spare/repair parts. Ensures that technicians document all repairs through the submission of MAFs, PAFs and SAFs to the MOMS. Verifies the inventory of state equipment on a quarterly basis (10 percent).
- Provides current maintenance and special project status to management, as required, through electronic mail or other media (5 percent).
- Inspects repair facilities, vehicles and operating locations weekly for quality of maintenance and safety (5 percent).
- Coordinates with operations personnel and toll facilities engineers new construction and equipment installation (5 percent).
- Advertises, interviews and hires to fill vacant positions, as directed by management (5 percent).
- Counsels technicians and evaluates technicians' job performance (5 percent).
- Supervises the operation of the bench test simulator (BTS) as directed by manager (5 percent).
- Ensures that technicians attend required training; provides formal instructions as required (5 percent).
- Coordinates access to secured areas of toll facilities through knowledge and the expertise in CARDKEY security systems (5 percent).

5. Regional Toll Technician Supervisor

Position is responsible for maintenance of all toll equipment and the supervision of all subordinate supervisors and technicians in the assigned region. This position supervises the second echelon of maintenance support for toll systems. It interfaces and coordinates with the 3-rd and 4-th levels of maintenance. The incumbent schedules personnel, establishes work priorities, and maintains administrative records. The incumbent supervises toll equipment technicians in troubleshooting, repair and replacement of toll collection equipment. The incumbent supervises the performance and record keeping of preventive maintenance and spare/repair pads projections by ensuring technical compliance with the MOMS. Coordinates weekly with the CRD and the chief of maintenance. Performs as a technician and other duties as required.



Required knowledge/skills:

- Plans and schedules the flow of work and work shifts establishing priorities for technicians (20 percent).
- Keeps time, Purchase Card approver, equipment, personnel, training and other records and performs other administrative functions as necessary for efficient management of technicians (15 percent).
- Supervises the performance and records, keeping of preventative maintenance and the ordering of required spare/repair parts. Ensures that technicians document all repairs through the submission of MAFs, PAFs and SAFs to the MOMS. Verifies the inventory of state equipment on a quarterly basis (10 percent).
- Assists and advises the technicians in troubleshooting and repair of comprehensive equipment malfunctions; trains technicians on technical and administrative functions. Installs new equipment in plazas and in lanes (10 percent).
- Coordinates with the CRD reference extremely difficult malfunctions, the field deployment and the possible shipment of defective equipment at the CRD for bench repair (5 percent).
- Inspects repair facilities, vehicles and operating locations weekly for quality of maintenance and safety (5 percent).
- Coordinates with operations personnel and toll facilities engineers new construction and equipment installation (5 percent).
- Counsels technicians and evaluates technicians' job performance (5 percent).
- Supervises the operation of the bench test simulator (BTS) as directed by manager (5 percent).
- Ensures that technicians attend required training; provides formal instructions as required (5 percent).
- Other duties as may be required (15 percent).



Appendix B: Description of ERI Positions

ERI Survey Code: 4032 Technician Electronics

Alternate Titles

Electronics Technician

Overview

Applies principles and theories of electronics, electrical circuitry, engineering mathematics, electronic and electrical testing, and physics. Work is more limited in scope and more practically oriented than that of scientists and engineers.

Lays out, builds, tests, troubleshoots, repairs and modifies developmental and production electronic components, parts, equipment, systems, and related products and services. Uses principles and theories of science, engineering, and mathematics to solve technical problems.

Typically requires equivalent to a two year associate's degree in engineering technology. Some companies require additional specialized training and experience.

ERI Survey Code: 1036 Technician Field Service

Alternate Titles

Field Service Technician; Mechanic Robot Maintenance; Robot Maintenance Mechanic; Robot Technician

Overview

Installs, programs, and repairs robots and related equipment, such as programmable controllers, robot controllers, end-of-arm tools, conveyors, and parts orienters, applying knowledge of electronics, electrical circuits, mechanics, pneumatics, hydraulics, and programming, using power tools, hand tools, and testing instruments and following manuals, schematic diagrams, and blueprints.

A combination of over two years of directly related training and/or experience is typically required for carrying out the responsibilities for this job.

ERI Survey Code: 681 Technician Instrument

Alternate Titles

Instrument Technician



Overview

Inspects, tests, adjusts, and repairs electric, electronic, mechanical, and pneumatic instruments and systems.

A combination of over four years of directly related training and/or experience is typically required for carrying out the responsibilities for this job.

ERI Survey Code: 397 Test Technician

Alternate Titles

Technician Test

Overview

Prepares specifications for fabrication, assembly, and installation of apparatus and control instrumentation used to test experimental or prototype mechanical, electrical, electromechanical, hydromechanical, or structural products, and conducts tests and records results, utilizing engineering principles and test technology.

Companies prefer two years specialized training or an associate's degree. Some companies may accept equivalent education and experience combined.

ERI Survey Code: 1867 WAN/LAN Technician

Alternate Titles

Computer Network Technician; IT Telecommunications Technician; LAN/WAN Technician; Network Communications Technician; Technician Computer Network; Telecommunications Technician

Overview

Installs and repairs data and voice communications lines and equipment such as modems, cables, and wires, using hand tools and test instruments.

A combination of over two years of directly related training and/or experience is typically required for carrying out the responsibilities for this job.

ERI Survey Code: 4108 Communications Technician

Alternate Titles

Electronics Mechanic; Mechanic Electronics; Technician Communications



Overview

Repairs electronic equipment, such as computers, industrial controls, audio and video systems, radar systems, telemetering and missile control systems, transmitters, antennas, and servomechanisms, following blueprints and manufacturers' specifications, and using hand tools and test instruments.

A combination of over two years of directly related training and/or experience is typically required for carrying out the responsibilities for this job.

ERI Survey Code: 1870 Computer Equipment Repairer

Alternate Titles

Data Processing Equip Repairer; IT Equipment Repairer; Repairer Computer Equipment

Overview

Installs and repairs data processing equipment, using hand tools, power tools, and electrical and electronic test equipment and following electrical code, manuals, specifications, schematic diagrams, and blueprints.

A combination of over two years of directly related training and/or experience is typically required for carrying out the responsibilities for this job.

ERI Survey Code: 1136 Electronic Equipment Repairer

Alternate Titles

Repairer Electronic Equipment

Overview

Repairs electronic equipment, such as radio and television receivers, radio transmitters, speakers, amplifiers, and related antenna and cable assemblies, according to product specifications, manufacturing instructions and diagrams, using test equipment, hand tools, and soldering iron.

A combination of over one year of directly related training and/or experience is typically required for carrying out the responsibilities for this job.

ERI Survey Code: 7564 Field Services Supervisor

Alternate Titles

Supervisor Field Services



Overview

Supervises and coordinates activities of field service engineers engaged in the installation, repair, and servicing of equipment and machinery in field installations.

This position typically reports to a manager level position and is the first level of supervision.

ERI Survey Code: 2276 Coin Machine Service Repairer

Alternate Titles

Repairer Vending Machine; Vending Machine Repairer

Overview

Installs, services, adjusts, and repairs vending, amusement, and other coin-operated machines placed in establishments on concession basis.

A combination of over one year of directly related training and/or experience is typically required for carrying out the responsibilities for this job.

ERI Survey Code: 2132 Radio Mechanic

Alternate Titles

Mechanic Radio

Overview

Tests and repairs radio transmitting and receiving equipment in accordance with diagrams and manufacturer's specifications, using electrical measuring instruments, wiring diagrams, and hand tools.

A combination of over one year of directly related training and/or experience is typically required for carrying out the responsibilities for this job.



Appendix C: Toll Agencies Compensation Survey

SURVEY

Compensation of Toll Maintenance Technicians

Please provide answers to as many questions as possible. Thank you!

1. Name of organization responding:
2. Is the function of toll equipment maintenance provided by in-house staff or by contractor?

In-house Contractor Combination

3. Including technical supervisory positions, approximately how many employees are involved in the toll equipment maintenance field?
 (e. g. toll technicians, electronic technicians, field supervisors, system technicians, etc.)

Number of In-House _____ Number of Contractor _____

4. For the following job titles, please provide the minimum, maximum and actual average salaries for similar positions.

Position Title	Minimum	Maximum	Actual Average
----------------	---------	---------	----------------

Toll Equipment Tech <i>Entry Level Technician: Two years technical training, inspects, maintains and repairs electro-mechanical equipment in lanes, trouble shoots and repairs with supervision</i>	_____	_____	_____
Electronic Toll Tech <i>Second Level Technician: Two years technical training & two years experience, inspects, maintains, trouble shoots and repairs more complex toll equipment such as electronic toll collection equipment</i>	_____	_____	_____
Toll Systems Tech <i>Third Level Technician: Diagnose, test, and repair assemblies and subassemblies and components of the toll system, provide 24 hour support to field techs and deal with malfunctions beyond the expertise of toll and electronic toll technicians</i>	_____	_____	_____
Field Tech Supervisor <i>First Level Supervisor: Schedules, prioritizes and manages work of the first two levels of technicians, responsible for record keeping and reporting on preventive maintenance performance</i>	_____	_____	_____
Regional Tech Supervisor <i>Second Level Supervisor: Overall responsibility for all toll equipment and supervision of subordinate supervisors for an assigned region</i>	_____	_____	_____
Toll Tech Service Manager <i>Third Level Supervisor/Manager: Overall responsibility for all toll equipment and supervision of subordinate supervisors for the entire organization</i>	_____	_____	_____



5. Is your organization's toll maintenance technician workforce unionized?

Yes No

6. What is the approximate fringe benefit additive for toll maintenance technician positions?

_____ percent

7. Please check any of the benefits listed below that are provided for any toll maintenance positions

	<u>Toll Tech</u>	<u>Electr.Tech</u>	<u>Sys.Tech</u>	<u>Field Super.</u>	<u>Regional Super.</u>	<u>Manager</u>
Shift Differential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Take Home Vehicle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Health Insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overtime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
On-Call Recompense	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Uniform Allowance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8. If you track turnover for this job family, what is the most recent annual rate?

_____ Year _____ percent

9. How many toll lanes does your organization operate?

- Total Number of Toll Lanes:
- Number ETC Exclusive Lanes:
- Number Manual Lanes:
- Number Mixed Lanes:
- Number "Other" (e.g. ACM):

10. May we contact you for further information?

Yes

Contact Name:

Phone:

E-Mail:

11. Comments:



Appendix D: The Turnpike Enterprise's 2004 Employee Survey

Leadership and Human Resource Practices Survey 2004 (CC 849) Tolls Equipment Maintenance Results for Cause Items		Florida Department of Transportation 08/01/2004					
	Resp. Avg.		Most Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Most Dissatisfied	DOT HI Q
	2003	2004					
Clear Performance Expectations							
I usually have a clear idea of what's expected of me; when in doubt, it is easy to get things clarified.	2.09	1.90	9	20	9	2	2.54
Our immediate supervisor has effectively discussed our work group's mission and goals with me.	2.02	1.85	6	24	8	2	2.52
Our immediate supervisor has effectively discussed our work group's mission and goals with me.	1.63	1.65	4	21	12	3	2.34
Dimension Averages	1.91	1.80					2.47
Employee Involvement							
I have access to the information I need to achieve desired results.	1.74	1.88	4	28	7	1	2.49
My immediate supervisor has regular discussions with us to review the performance of our work group, to discuss common problems, and to plan ways to improve.	1.82	1.72	7	20	8	5	2.48
Our immediate supervisor frequently asks for our ideas about solving the problems we face.	1.73	1.70	6	21	8	5	2.49
In the past year, my immediate supervisor has discussed my pay concerns and answered my questions about pay.	1.28	1.40	2	19	12	7	2.44
I have been given the authority I need to achieve the results expected of me.	1.93	1.95	7	24	9	0	2.50
People in our work group are able to let supervisors know how they feel about things that affect them.	1.96	1.88	5	27	6	2	2.48
Dimension Averages	1.74	1.75					2.48



Focusing on Quality/Improvements	Resp. Avg.		Most	Somewhat	Somewhat	Most	DOT
	2003	2004	Satisfied	Satisfied	Dissatisfied	Dissatisfied	
In my work group, we have identified our customers and discussed how to meet their expectations.	2.27	2.02	3	2	1	0	2.55
In our work group, we spend time finding ways to make lasting improvements, rather than making "quick fixes".	1.91	1.75	8	18	10	4	2.45
In my work group, we use information from our customers to improve the quality of our work.	1.98	1.92	6	25	9	0	2.49
Our immediate supervisor encourages us to find new and better ways to do our work.	1.91	1.88	6	25	7	2	2.56
My immediate supervisor demonstrates in day-to-day actions that quality is important.	1.78	1.82	7	22	6	4	2.53
Dimension Averages	1.97	1.88					2.52

High Performance Expectations	Resp. Avg.		Most	Somewhat	Somewhat	Most	DOT
	2003	2004	Satisfied	Satisfied	Dissatisfied	Dissatisfied	
Standards of performance here are high; the results expected of people are the best they are able to produce.	1.73	1.67	3	2	1	0	2.43
Poor performance is not tolerated in our work group.	1.50	1.45	2	19	14	5	2.29
Dimension Averages	1.62	1.56					2.36

Planning and Organizing/Resource Mgmt	Resp. Avg.		Most	Somewhat	Somewhat	Most	DOT
	2003	2004	Satisfied	Satisfied	Dissatisfied	Dissatisfied	
Our work group's equipment is maintained when needed, and without unreasonable delay.	1.91	1.97	7	27	4	2	2.55
My immediate supervisor gives attention to the physical conditions of our work area (for example, noise, lighting, cleanliness, temperature, space).	1.91	1.75	7	20	9	4	2.47
The Department provides alternate work schedules to help employees handle personal concerns.	2.22	2.02	8	26	5	1	2.66
Dimension Averages	2.01	1.92					2.56



	Resp. Avg.		Satisfied	Satisfied	Dissatisfied	Dissatisfied	DOT
	2003	2004					
Recognition and Feedback			<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	
Employees are recognized for working together, not just for individual performance.	1.52	1.40	3	16	15	6	2.32
I get helpful and timely feedback on my performance.	1.70	1.67	5	20	12	3	2.41
Enough recognition and praise are given for a job well done.	1.28	1.38	3	14	18	5	2.26
Dimension Averages	1.50	1.48					2.33

	Resp. Avg.		Most Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Most Dissatisfied	DOT
	2003	2004					
Training and Development			<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	
I get the training I need when I need it.	1.78	1.67	4	19	15	1	2.50
My immediate supervisor makes sure the people in our group have the knowledge and skills required to achieve outstanding results.	1.98	1.92	11	18	8	3	2.56
Training and development opportunities are available to all employees.	1.74	1.57	1	24	12	3	2.50
Dimension Averages	1.84	1.72					2.52

	Resp. Avg.		Most Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Most Dissatisfied	DOT
	2003	2004					
Communication			<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	
I have a clear understanding of the mission and goals of the Department of Transportation.	2.24	2.20	12	25	2	1	2.57
I know how well I am doing because I have the information to measure my own progress.	1.80	1.85	6	24	8	2	2.40
I am kept well informed about what is happening in my part of the Department.	1.48	1.52	4	17	15	4	2.37
I know how my work contributes to the goals of my work group and the Department.	2.18	2.13	9	28	2	1	2.61
Dimension Averages	1.93	1.92					2.49



DOT is Improving	Resp. Avg.		Most	Somewhat	Somewhat	Most	DOT HI Q
	2003	2004	Satisfied	Satisfied	Dissatisfied	Dissatisfied	
			<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	
The Department is changing; I can see many new and better ways that we will be serving the public.	1.77	1.75	4	24	10	2	2.24
Since last year's survey, I have seen improvements in some of the things this survey asks about.	1.24	1.23	2	10	22	5	2.20
Dimension Averages	1.51	1.49					2.22

Management Credibility	Resp. Avg.		Most	Somewhat	Somewhat	Most	DOT HI Q
	2003	2004	Satisfied	Satisfied	Dissatisfied	Dissatisfied	
			<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	
Generally Speaking, we can believe what managers and supervisors tell us.	1.67	1.72	4	23	11	2	2.33
I believe DOT's Secretary, Assistant Secretaries, and District Secretaries will use the results of this survey to make changes that will improve leadership practices.	1.55	1.60	6	17	12	5	2.18
Dimension Averages	1.61	1.66					2.26

Productivity / Use of Resources	Resp. Avg.		Most	Somewhat	Somewhat	Most	DOT HI Q
	2003	2004	Satisfied	Satisfied	Dissatisfied	Dissatisfied	
			<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	
Good use is made of the people and other resources available in our work group.	1.70	1.85	5	25	9	1	2.35
Work is well planned in our work group.	1.77	1.67	3	23	12	2	2.39
People in my work group do not wait to be told when something needs to be done; they usually decide on their own how to produce the best results.	1.78	1.70	3	24	11	2	2.47
We have resources we need to produce good results; our performance does not suffer from the need for equipment, funds, staff or other resources.	1.50	1.50	5	14	17	4	2.36
We have common goals here; people are more concerned about what is best for DOT overall than what is good for themselves or their own group.	1.70	1.63	2	24	11	3	2.20
Dimension Averages	1.69	1.67					2.35

Florida's Turnpike Enterprise
Compensation Study: Toll Maintenance Classifications
 Final Report, September 1, 2005



Promotions, Selection, Compensation	Resp. Avg.		Most Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Most Dissatisfied	DOT HI Q
	2003	2004	3	2	1	0	
Promotions in my part of DOT are based on performance and ability.	1.40	1.20	1	17	11	11	2.22
It is not difficult to find out about jobs and career opportunities in the Department.	1.71	1.77	4	24	11	1	2.22
The various award programs in DOT have been effective in recognizing and rewarding outstanding performance.	0.85	0.95	1	7	21	11	1.94
DOT's managers fairly administer the selection process.	1.71	1.70	3	24	11	2	2.26
The pay that people receive is in line with their responsibilities and performance.	0.70	0.52	0	4	13	23	1.68
Dimension Averages	1.27	1.23					2.06
Respect and Concern	Resp. Avg.		Most Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Most Dissatisfied	DOT HI Q
	2003	2004	3	2	1	0	
My immediate supervisor treats employees with respect.	2.20	2.20	11	26	3	0	2.64
My immediate supervisor takes a genuine interest in the overall well being of employees.	2.00	1.95	7	26	5	2	2.57
Dimension Averages	2.10	2.07					2.61
Other Items	Resp. Avg.		Most Satisfied	Somewhat Satisfied	Somewhat Dissatisfied	Most Dissatisfied	DOT HI Q
	2003	2004	3	2	1	0	
The push to do daily work does not keep us from doing what we should about the long-term needs of the Department.	1.98	1.88	4	28	7	1	2.25
I like my job.	2.38	2.32	17	19	4	0	2.68
Work conditions in my work group consistently meet DOT safety standards.	2.20	2.17	11	25	4	0	2.60
From what I see, DOT's projects and work plans thoroughly consider how the environment and the community are affected.	1.92	2.05	4	34	2	0	2.42
The results expected of me are reasonable.	2.13	2.17	10	27	3	0	2.50
I get a lot of satisfaction from my work; I feel productive and effective.	2.05	2.13	10	25	5	0	2.56
DOT acts as a good servant to the community it serves.	2.00	2.03	5	30	4	0	2.50
I am proud to belong to my work group and to work for the Department.	2.25	2.26	12	24	2	0	2.66
Dimension Averages	2.11	2.13					2.52
Total Survey Score	95.20	93.48					128.18
Total Survey Average	1.80	1.76					2.42
Turnpike Average Results (All Cost Centers)	2003	2004	2000				
	1.97	2.08	1.84				