

Measuring Up

Volume 1



Keystone



Transit



Partnership

**Keystone Training Improves Skills,
Maintenance Efficiency,
and Reliability**



Preface

Measuring Up is the fruit of a long-term effort by the Community Transportation Center and its staff, particularly lead author Xinge Wang, the Center's Research Associate, and her partner in this work, Jack Clark, Director of Workforce Development. Their research shows that enhanced maintenance training through Pennsylvania's statewide Keystone Transit Career Ladder Partnership has (1) raised the knowledge and skill levels of transit maintenance employees, (2) led to improved effectiveness in diagnostics and repair and (3) yielded reduced maintenance costs and improved vehicle reliability. These findings are important and, frankly, rare for this kind of research.

Demonstrating that training makes organizations more effective has been a perennial but elusive goal for workforce development research. The wide range of changing conditions surrounding any new training program – changes in fleet composition and age, weather, business practices, and so forth in the transit industry – makes it difficult to demonstrate that training leads directly to improvements in performance.

Measuring Up has gone further than many studies in identifying the impacts of training because of the perseverance of the Center's research team and the thoughtful assistance provided by Pennsylvania's transit systems and unions, particularly at SEPTA. Most importantly, however, this research was able to find and measure these results because of the extraordinary effectiveness of the Keystone Transit Career Ladder Partnership and the training it has developed.

This second edition of *Measuring Up* builds on research conducted by the Center over the past several years. In 2003 *Pennsylvania Transit on the High Road* examined the history of Pennsylvania's innovative Keystone Transit Career Ladder Partnership and reported leadership impressions. In 2004 *Making a Difference* showed that workers receiving Keystone training and their supervisors perceived the program to be extremely valuable. *Measuring Up* builds on that earlier work by exploring quantitative changes in the key components of transit operations and their linkages to the new Keystone maintenance training.

The Center is continuing its research on the unique labor-management training partnership in the transit industry. Subsequent volumes will include more intensive work on the effects of new training in smaller transit properties as well as in Pittsburgh's Port Authority Transit and ATU Local 85. This work will go into greater depth in measuring the impacts of training in specific areas of transit operations and maintenance.

Finally, we want to acknowledge the Pennsylvania Department of Labor and Industry and the Federal Transit Administration. Their support made this study possible.



Brian Turner, Director

Measuring Up: The Keystone Transit Partnership (Volume I)

Introduction and Overview

1. Background

One of five pilot locations in a national Transit Technology Career Ladder Program, the Keystone Transit Career Ladder Partnership started in Philadelphia in the winter of 2001 and expanded to a statewide program. It has provided training to over 2,000 Pennsylvania transit maintenance employees, covering most aspects of bus, rail and facilities maintenance (See Chart 1 for details).

Building on strong labor-management partnerships, Keystone has made it possible for a record number of mechanics to upgrade their skills and move up the transit career ladder in an industry facing dramatic technological change and skill shortages. Chart 2 on the following page illustrates examples of the Keystone career ladder promotions and corresponding wage increases in Philadelphia. To document and analyze these initiatives, the Transportation Center began a long-term in-depth case study of the Keystone Partnership in early 2003. Its primary goal is to provide objective measurements of the impacts of training, using both quantitative and qualitative data. This “*Measuring Up (Volume I)*” report is the third in a series of reports for that case study.

Chart 1
Number of Trainees by Location and Phase
Keystone Transit Career Ladder Partnership (Dec. 2001 – June 2004)

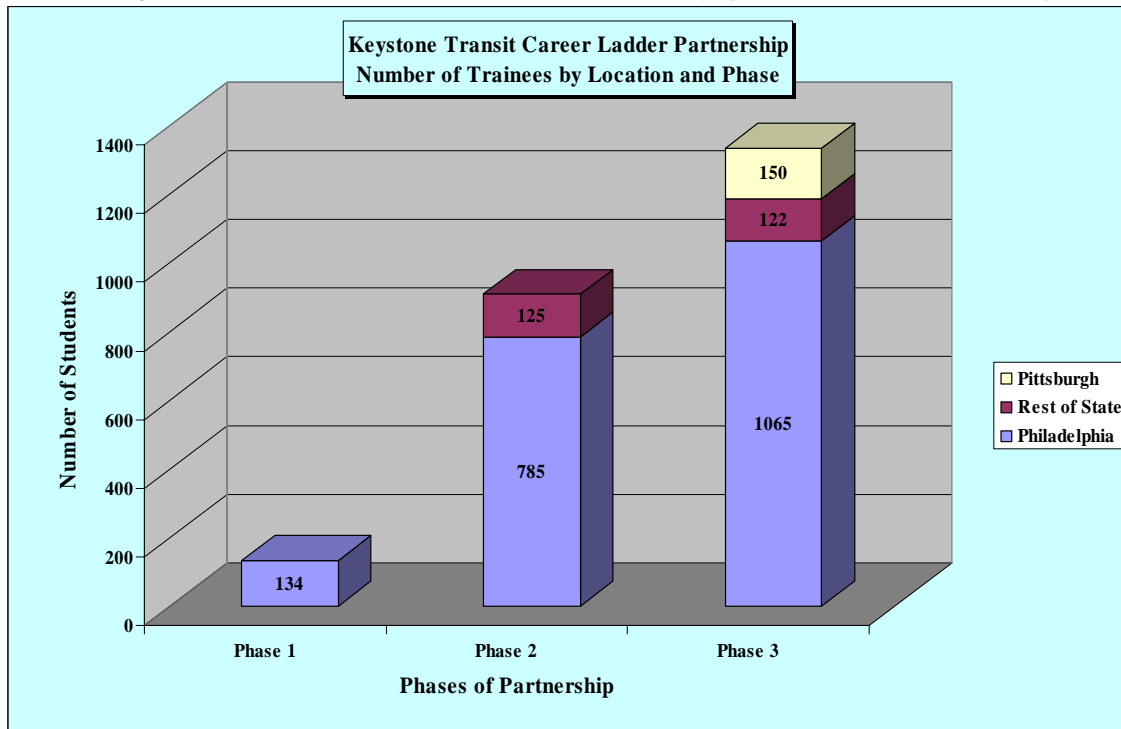
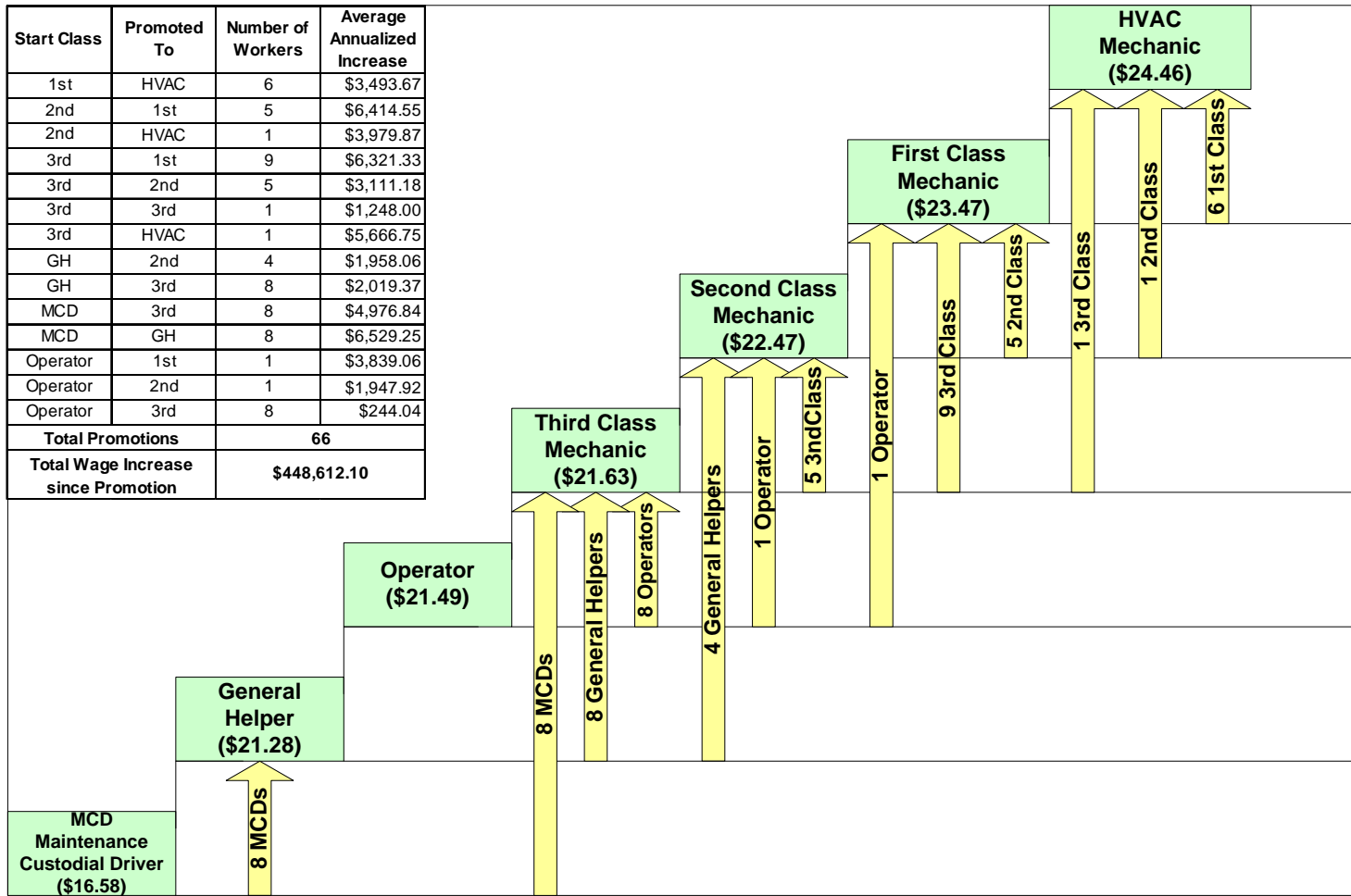


Chart 2

**Keystone Transit Career Ladder Partnership
Philadelphia Promotions and Wage Increases* 12/1/2001 – 9/30/2004**



* The wage rates shown in this chart are top rates in each classification. Entry rate for a classification is based on a percentage of the top rate, in most cases, 60 percent. After 48 months (108 months for MCD; 12 months for 1st Class and HVAC Specialist), the wage advances to 100 percent top rate. Wage progression is based on overall Authority seniority rather than seniority under each classification.

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The Center's first Keystone report documented the formation and early development of the Keystone Transit Partnership. That report, *Pennsylvania Transit on the High Road*,¹ was published in July 2003. The second Keystone report measured the perception of transit employees and their supervisors about the Keystone training program. More than 350 Pennsylvania transit workers and supervisors took part in a survey that formed the basis of *Making a Difference in Pennsylvania Transit*,² published in June 2004.

These earlier reports focused on the experience and perceptions of transit managers, union officials, front-line supervisors and trainees. While these studies revealed that Keystone was very positively viewed by different groups of participants, they did not ask whether Keystone has led to learning gains of trainees and improved transit maintenance in a way that could be quantitatively evaluated. The "*Measuring Up (Volume I)*" report explores this new territory. By utilizing multiple sources of quantifiable data,^{3,4,5} the Center has been able to investigate the impact of Keystone training on employee job task knowledge and job performance as well as changes in the practice and results of vehicle maintenance and reliability.

2. General Hypotheses

The "*Measuring Up (Volume I)*" study is based on the following hypotheses (Illustrated in Figure 1 on the following page):

¹ A PDF copy of this report may be found at www.transportcenter.org/Keystone/index.html.

² Ibid.

³ Even though a large amount of data has been collected for analysis, findings presented in this report are primarily based on the following data sets:

- Keystone training and promotion databases;
- Keystone Philadelphia pre-training and post-training subject knowledge test results;
- SEPTA (Southeastern Pennsylvania Transportation Authority - Philadelphia) bus mechanic performance test results;
- SEPTA Vehicle Maintenance Information Systems (VMIS) reports: Reason for repair analysis; Repair analysis by job;
- SEPTA Mean Distance Between Failures;
- SEPTA bus employee attendance infractions;
- AMTRAN (Altoona, Pennsylvania) parts usage report.

⁴ PAT Transit in Pittsburgh and ATU Local 85 joined Keystone and started to provide training in the early part of 2004. This study did not include any data from Pittsburgh, because the effects of training are most likely to become evident in the years following training. However, Pittsburgh will be incorporated in the future research on the impact of training.

⁵ The Center also solicited comments and data from other smaller Pennsylvania transit properties on the outcomes of Keystone training. More than half a dozen maintenance managers responded and many cited improved reliability of air conditioning systems and reduced downtime of electrical/electronic systems as a result of training. However, quantifiable data collection proves to be a challenge with the smaller properties because of the relatively low level of automation in their vehicle maintenance tracking systems.