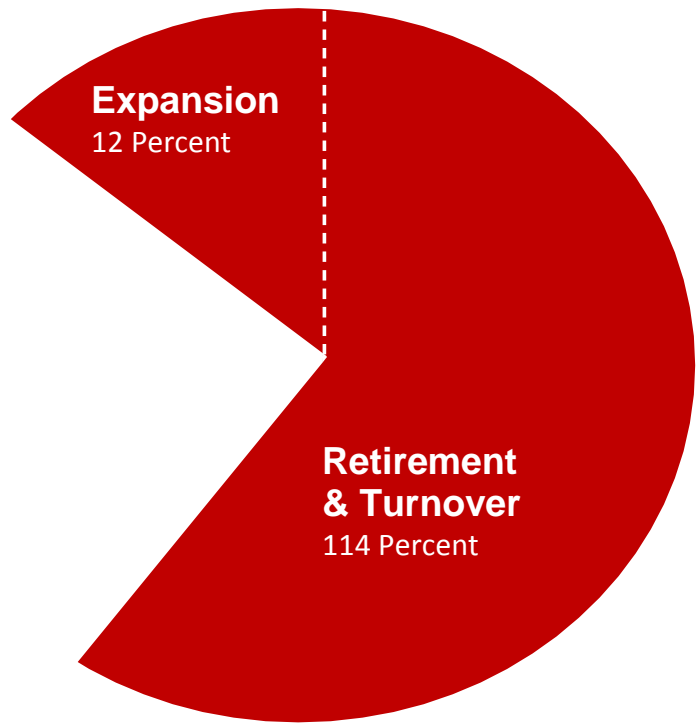


Career Pathways and Career Ladders for the Frontline Workforce:

Innovative Models Leveraging Training Standards and Stakeholder Engagement



Source: TLC Analysis of BLS and NTD data.

Career Pathways and Career Ladders for the Frontline Workforce: Innovative Models Leveraging Training Standards & Stakeholder Engagement Overview

Needs and Opportunities

The needs of the public transportation industry for more effective workforce development systems are now generally acknowledged as urgent. Transit has an older workforce than any other transportation sector, with 63 percent older than 45. The workforce challenge is heightened by transit growth, with rail transit ridership in particular up more than 80 percent since 1996, and by the ever growing demands of new technology. Over the next ten years the transit industry will need to hire and train the equivalent of 126 percent of today's total employment to meet the demands of industry growth, retirements and employees switching jobs. Of that projected demand for hiring and training approximately 500,000 employees, 90 percent of the total will be in frontline operations and maintenance occupations that do not require a four-year degree but do require extensive training after hiring.

With past federal incentive structures and policies aimed almost exclusively at physical rather than human capital, the industry has radically underinvested in developing workforce skills and capabilities. As documented by the Transportation Learning Center (the Center) and others, the industry has been investing very little in workforce training - less than 0.88 percent of total payroll total and less than 0.5 percent of total agency budgets. The bulk of past program and budget priorities at the Department of Transportation (DOT) and the Federal Transit Administration (FTA), to the extent they addressed transit workforce issues, concentrated on managers and technical white collar employees rather than the needs of the frontline workforce – the operations and maintenance employees who make up 80 percent of transit employment. The resulting disparate frontline workforce development efforts in the industry have been generally insufficient, inconsistent and unnecessarily expensive, further reinforcing the tendency toward underinvestment in frontline workforce. In addition to shortcomings in agency training for transit employees, the pipeline of future applicants coming into transit – like other industries that rely on a technically capable blue collar workforce – has been systematically too small, as American school systems are producing a limited supply of future technicians. School systems across the decades have, until recent initiatives, cut career development education programs for the 70 percent of young people who are not headed toward a four-year college degree. High US dropout rates for non-college bound youth who are not engaged in quality career-oriented education burden the communities served by transit and weaken industries like transit that require a strong supply of technically qualified young people.

Facing this multi-dimensional skills crisis for its frontline technical workforce and looking to offer career opportunities to targeted groups in transit's communities, America's transit industry needs cost-effective, high quality and consistent models that can be readily customized for local implementation across the industry. An inclusive group of stakeholders from transit agencies, transit labor, community-based workforce development organizations and secondary and post-secondary educational and training institutions have been brought together with TLC in this important project to develop and pilot standards-based and competencies--based pre-employment curriculum to create a pathways for an incoming frontline transit workforce.

Over the past decade the US transit industry has begun to develop foundational components of a national standards-driven, stakeholder-based system for frontline workforce development. Working with the Center, transit management and labor, engaged through unique innovative partnerships involving stakeholders from national organizations and over 40 transit systems – and with critical support from FTA, US Department of Labor (DOL), and the Transit Cooperative Research Programs (TCRP) – have developed and adopted national training standards for six core frontline occupations: maintenance technicians for transit bus, rail car, signals, traction power and elevator-escalator as well as bus operators. To leverage training standards into useable workforce development programs, national and regional partnerships have been building the basic components for a standards-based system of frontline workforce development, including frameworks for apprenticeship, mentoring, sharing existing courseware and collaboratively developing new courseware where it is needed.

This emerging system of training and qualification (Figure 1) addresses the needs of employers, current workers and potential new hires from the community. Industry-defined standards for training offer clear definitions of what people need to know. Management and labor can address current skills gaps so that incumbent workers have the skills needed for today and tomorrow. By building in mentoring so that classroom instruction is carried over into on the job learning, transit creates a new infrastructure for continuous learning. The training standards provide a common frame of reference for transit and career and technical education providers in high schools and community colleges. Formal apprenticeships recognize the role of skilled journey workers and master technicians in passing on skills and knowledge. The apprenticeship framework provides a clear road map for lesser skilled incumbent workers and for new hires to achieve mastery in the work environment.

The Project

Over the past 18 months, this multi-location Career Pathways and Career Ladders project has leveraged these early components of a transit standards-based training framework to develop and then pilot local implementation of stakeholder- based models for two principal areas of workforce innovation:

1. Career Pathways for students into frontline transit jobs and careers, linking transit agencies and unions with secondary and post-secondary schools and colleges, and
2. Career Ladder Training and Apprenticeship based on national standards for new hires and incumbent frontline workers provided by transit agencies – the primary source of training for transit employees. In addition, the partner organizations identified ways to enhance the integration of the second principal source of frontline transit employee skill development, OEM-provided training, with ongoing workforce development efforts within transit systems.

As detailed in this report, the Center and its partners have made significant progress in creating new and innovative Career Pathways and Career Ladders practices and models and moving significant established existing practices and models forward. In addition, the Center has created and taken advantage of a variety of opportunities to migrate information about models and lessons learned to a transit and transportation audience beyond our project partners through a series of presentations, report and conferences. These activities have helped to stimulate and extend discussion of these important issues to a range of industry, government and non-profit entities interested and involved in Career Pathways and Career Ladders work, and have helped to creates creating the foundation for new initiatives that will move this important work forward.

Figure 1: Standards Based Training Systems for Transit Frontline Occupations

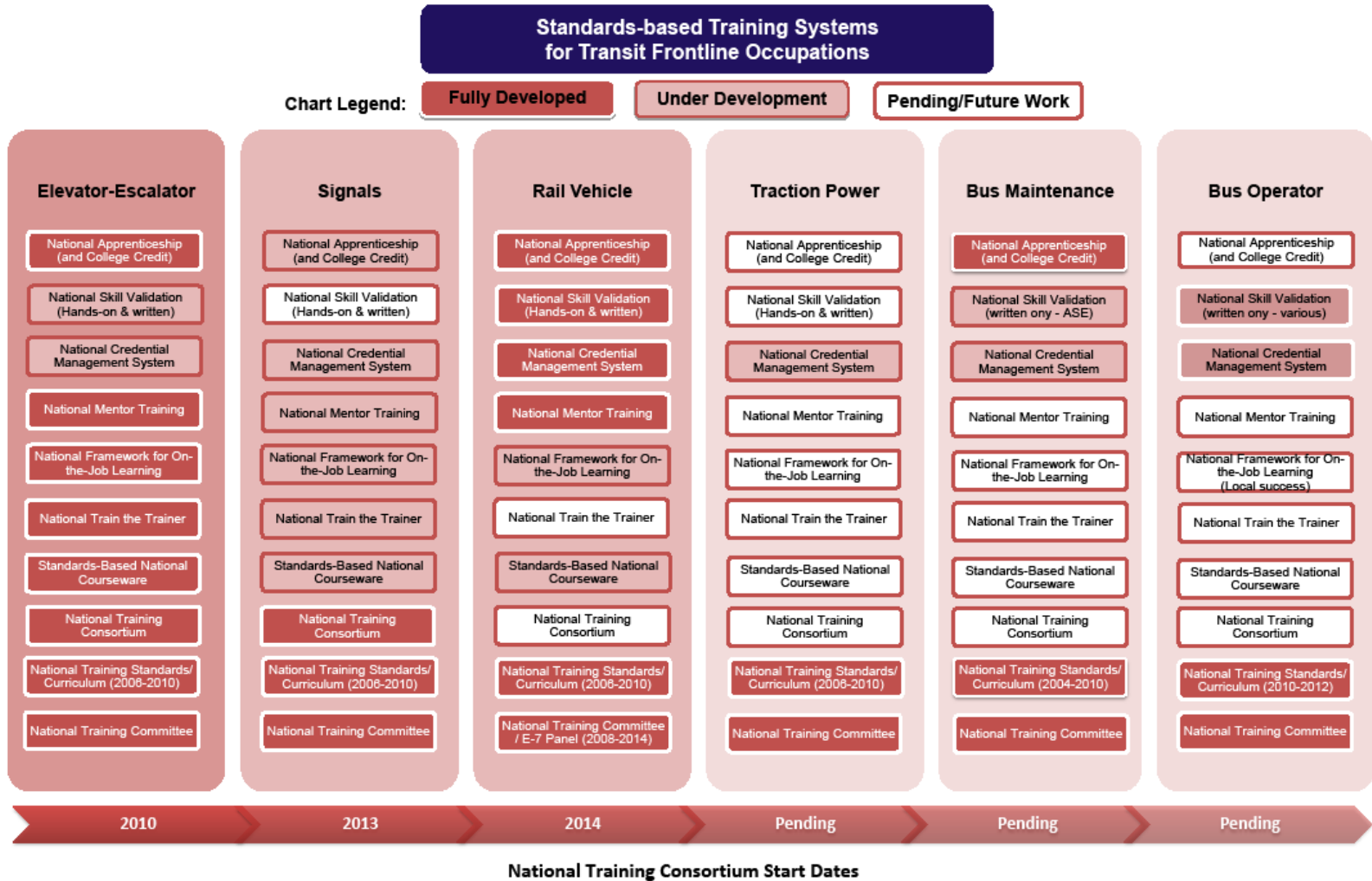


Table of Contents

CAREER PATHWAYS AND CAREER LADDERS FOR THE FRONTLINE WORKFORCE: INNOVATIVE MODELS LEVERAGING TRAINING STANDARDS & STAKEHOLDER ENGAGEMENT OVERVIEW	I
NEEDS AND OPPORTUNITIES.....	I
THE PROJECT.....	II
INTRODUCTION AND OVERVIEW	1
NATIONAL CAPACITY BUILDING AND DISSEMINATION	3
PROJECT CONFERENCES AND WEBINARS.....	3
<i>Project Launch Conference</i>	3
<i>Project Webinar</i>	4
<i>Project Final Conference</i>	4
TRANSIT-SPECIFIC HANDS-ON LEARNING MODULE	5
TRANSIT BUS ORIGINAL EQUIPMENT MANUFACTURER (OEM) TRAINING.....	5
PERFORMANCE MEASUREMENTS REPORT	5
<i>Hypothesis 1:</i>	6
<i>Hypothesis 2:</i>	6
<i>Hypothesis 3:</i>	6
<i>Hypotheses 4a:</i>	6
<i>Hypothesis 4b:</i>	6
NATIONAL DISSEMINATION OF PROJECT RELATED WORK.....	7
CAREER PATHWAYS	9
DETAILED CORE CURRICULUM OUTLINE.....	10
OBTAINING ACADEMIC CREDIT FOR TRANSIT TRAINING	10
A REPORT FROM THE CAREER PATHWAYS AND CAREER LADDERS PROJECT	10
PHILADELPHIA, PA	11
<i>Public Transit After School Program</i>	12
<i>SEPTA TWU Summer Youth Program</i>	12
<i>Public Transit Curriculum for High Schools</i>	13
<i>SEPTA-TWU Career Pathways Program and Community Colleges</i>	13
SALT LAKE CITY, UT	14
<i>Career Fair</i>	14
<i>Keys to Success</i>	14
<i>Other Conferences, Outreach to Women</i>	15
<i>Additional Engagement and Recruitment Initiatives</i>	15
WEST VIRGINIA	15
<i>Interactive Learning Modules</i>	16
<i>Dissemination of APTA Transportation Careers Poster</i>	16
CAREER LADDERS.....	22
MENTOR TRAINING	23
CLEVELAND, OH.....	23
<i>Rail Vehicle Apprenticeship</i>	24
<i>Training Plan</i>	24
<i>Courseware Validation</i>	24
<i>TCRP E7 Hands-on Assessment</i>	25
DES MOINES, IA.....	26
<i>Bus Maintenance Apprenticeship</i>	26

<i>Skills Gap Analysis</i>	27
<i>Standard Operating Procedures</i>	27
PROJECT PARTNER HIGHLIGHTS: IMPACT OF THE PROJECT, WHAT THEY HAVE LEARNED AND FUTURE DIRECTIONS	29
<i>Learning from and Impact of Program Overall:</i>	29
<i>Working with Young People</i>	29
<i>Ideas Moving Forward</i>	30
CONCLUSION	31

Introduction and Overview

The Career Pathways and Career Ladders (CPCL) project consisted of three Career Pathways locations and two Career Ladders locations. Career Pathways sites developed a workplan at the first national conference to determine their activities for the duration of the grant. Career Ladders sites were committed to developing apprenticeship programs in addition to participating in other career ladders activities. Locations that participated in the CPCL project were:

Career Pathways

- Philadelphia, PA
 - Transport Workers Union (TWU) Local 234
 - Southeastern Pennsylvania Transportation Authority (SEPTA)
 - Keystone Development Partnership (KDP)
- Salt Lake City Utah
 - Utah Transit Authority (UTA)
 - Amalgamated Transit Union (ATU) Local 382
- West Virginia
 - State Department of Education Division of Career and Technical Education
 - Rahall Transportation Institute

Career Ladders

- Cleveland, OH
 - ATU Local 268
 - Greater Cleveland Regional Transit Authority (GCRTA)
- Des Moines, IA
 - Des Moines Area Regional Transit (DART)
 - ATU Local 441

For participation in the CPCL project, Philadelphia, Utah, Cleveland, and Des Moines designated one management representative and one labor representative to be the contact for CPCL activities. In the case of Philadelphia, KDP was an additional representative that helped manage the workplan and career pathways activities for TWU Local 234 and SEPTA. In West Virginia the partners were from the Rahall Transportation Institute, represented by their Director of Workforce Development and Education, and the State Department of Education, represented by their Assistant State Superintendent who is in charge of the Division of Career and Technical Education.

In its Career Pathways and Career Ladders proposal to the Federal Transit Administration, the Center proposed to accomplish work in three major areas: National Capacity Building and Dissemination, Career Pathways, and Career Ladders. Within each of these areas the Transportation Learning Center (the Center) proposed that it would accomplish the following:

- National Capacity Building and Dissemination
 - Hold two project conferences and one project webinar
 - Develop at least one transit specific hands-on learning module,
 - Prepare a synthesis report on current and recommended transit practices on integrating OEM training in procurement, warranty work, and agency training,
 - Produce a performance measurements report that will provide targeted quantitative and qualitative performance measures, lessons learned, and a statement of applicability to other entities.
- Career Pathways
 - Develop a detailed core curriculum outline linked to required competencies and standards
 - Develop at least two interactive learning modules based on the core curriculum outline
 - Produce a report on obtaining academic credit
- Career Ladders
 - Establish joint training/apprenticeship committees within locations

- Conduct skills gap analyses or training gap analysis
- Identify training targets and draft a training plan
- Validate at least two existing courses
- Recruit and provide training to eight mentors

National Capacity Building and Dissemination

The Career Pathways and Career Ladders (CPCL) project was designed to build national capacity by developing cross-location workforce development resources that could enhance and support local Career Pathways and Career Ladders initiatives, while also providing locations with national resources to help with the continuation of their initiatives after the program has ended. In addition to National Capacity Building, the Center and CPCL site representatives delivered presentations on the work that was being accomplished during the course of this grant at a variety of conferences and seminars.

Project conferences and webinars

Project Launch Conference

On May 29-30, 2013 the Center held the Career Pathways and Career Ladders project launch conference in Silver Spring, Maryland. Labor and management representatives from UTA, SEPTA, DART, and GCRTA were in attendance. West Virginia (Career Pathways) representatives came from the West Virginia State Department of Career and Technical Education and the Rahall Transportation Institute. Since this was the first meeting of the locations, the purpose of this conference was to introduce the grant and the grant participants, allow sites to share information with each other and establish workplans for each individual Career Pathways location and apprenticeship goals for each individual Career Ladders location.

During this May 29-30 conference, participants attended two joint sessions in which each site discussed past, present and future ladders and pathways activities and shared resources, information and ideas across locations. The working meeting included presentations from GCRTA and a representative from the U. S. Department of Labor's Office of Apprenticeship (OA). GCRTA and ATU Local 268 described the development of the rail vehicle technician apprenticeship that they planned to develop through the CPCL grant. This presentation provided detail on how they would adapt the existing qualification structure developed in the Transit Cooperative Research Project (TCRP) E7 project (Initiating a National Transit Industry Rail Vehicle Technician Qualification Program: Building for Success) to fit their needs for training and assessment within their apprenticeship program. Kenya Huckabee from the Office of Apprenticeship (OA) gave a presentation on and answered questions about the function and programs that OA offers related to Registered Apprenticeships and the Registered Apprenticeship-College Consortium program. The group then developed and delivered a short presentation and PowerPoint on the planned project pathways and ladders activities across locations. This presentation was delivered as part of a final conference plenary session that included representatives from three other Center working groups: the Elevator-Escalator Consortium; the Signals Training Consortium; and the Rail Vehicle Committee. A summary of the Career Pathways and Career Ladders group's PowerPoint presentation can be found at this link: http://www.transportcenter.org/news_events/news_detail/center-convenes-committees-addressing-training-recruitment-for-the-public-t

In addition to the cross-fertilization across projects, CPCL participants were able to put their work in a broader context, listening to and engaging with senior officials from DOT, US DOL and the US Department of Education, who spoke at the plenary session about current initiatives to expand training, apprenticeship and education opportunities for the frontline blue collar workforce. Vince Valdes, Associate Administrator of FTA, reported on FTA's new safety initiatives and how FTA was beginning to implement MAP-21's new training provisions. DOL's John Ladd, Administrator of the Office of Apprenticeship, updated the group on DOL's project to provide college credit for work-based learning in registered apprenticeship programs. Johan Uvin, Deputy Assistant Secretary of Education for Adult and Experiential Learning, shared the latest news on Career and Technical Education partnerships to expand the pipeline of qualified applicants for technical jobs in industries like transit. Their presentations can be found on the Center's website at http://www.transportcenter.org/news_events/news_detail/transportation-education-industry-leaders-participate-in-the-centers-confer.

Project Webinar

The Center held a webinar for project participants on Tuesday, February 18, 2014. All locations were represented and gave presentations on their progress to-date on their Career Pathways or Career Ladders work. The Center provided updates on interactive transit-related modules being designed for West Virginia Career and Technical Education (CTE) high school students, ongoing community college discussions, as well as a brief demonstration of how an online community can be established for continuing connection as the locations had requested in the May 2013 project kick-off conference. Center leadership also made initial and closing statements contextualizing and connecting the work across locations.

Project Final Conference

On Wednesday, September 17 just over 30 invited and engaged participants from a diverse group of organizations came together for the Transportation Learning Center's "Making Connections" Career Pathways and Career Ladders Roundtable Conference. Using a format that included short kick-off comments and extensive interaction throughout the day, attendees addressed significant issues, asked questions and shared information around the following topics:

- Creating and Building on Career Ladders and Pathways in Transit: An Examination of Need, Opportunities and Frameworks
- Outreach and Engagement: Effective Practices and Stakeholder Buy-In
- Mentoring for Pathways and Ladders
- The Critical Role of the Apprenticeship and Rigorous Career Ladder Training
- Education Programs as Partners and Stakeholders in the Pathways and Ladders System
- Stakeholder Engagement: Opportunities and Challenges



TWU Local 234 Vice President Darryl Mack providing kick-off comments in the Outreach and Engagement session of the final project conference. During the course of the project, TWU Local 234, SEPTA, and KDP developed an afterschool program and continued implementation of their Summer Youth Program.

The following organizations participated in the CPCL final conference:



Edward Kawecki (GCRTA,) Doug Schneider (ATU Local 268) and Lisa Mahoney of NCCRS listening intently to the benefits of registered apprenticeship in The Critical Role of Apprenticeship and Rigorous Career Ladder Training session. During the project GCRTA and ATU Local 268 developed a railcar apprenticeship program.

- AFL-CIO,
- Albert Shanker Institute/American Federation of Teachers,
- Amalgamated Transit Union,
- Amalgamated Transit Union Locals 268 (Cleveland,) 382 (Utah,) 441 (Des Moines,) 1277 (Los Angeles,) and 1300 (Baltimore,)
- American Public Transportation Association,
- Des Moines Area Regional Transit Authority,
- Economic Policy Institute,
- Greater Cleveland Regional Transit Authority,
- Jobs for the Future,
- Keystone Development Partnership,
- Massachusetts AFL-CIO,
- Leadership Conference on Civil and Human Rights,
- Mountwest Community and Technical College,
- National College Credit Recommendation Service,
- Regional Transportation District-Denver WIN Program,

- Southeastern Pennsylvania Transportation Authority,
- Transport Workers Union Local 234 (Philadelphia),
- Transportation Communications Union/International Association of Machinists and Aerospace Workers,
- U.S. Department of Education Office of Career, Technical, and Adult Education,
- U.S. Department of Labor Office of Apprenticeship,
- U.S. Department of Transportation Federal Transit Administration,
- Utah Transit Authority, and
- Wider Opportunities for Women.

The unique interactive design of the conference allowed for federal agency officials and representatives from nationally and regionally-based non-profits to provide information to and hear about cutting-edge programs from transit agency and union representatives who work with young people and community members on a day-to-day basis. Stakeholders working on national, state, regional and local levels were able to share perspectives and experiences through dialogue during the sessions as well as through opportunities to network more informally during regular breaks throughout the day.



Betty Jackson of FTA and Valerie Wilson of EPI in conversations during a break

In written and oral evaluations attendees expressed enthusiasm about the conference, commenting on the power of bringing diverse participants “to the table” and enabling them to talk with—and not at—each other throughout the day. They expressed appreciation for the opportunity to address key issues for all participants and to be able to network with people and organizations at all levels of the Career Pathways and Ladders system. Other CPCL activities from this final conference and more photos can be found at <https://www.facebook.com/media/set/?set=a.791228770920027.1073741827.108809109162000&type=1>.

Transit-Specific Hands-On Learning Module

Greater Cleveland Regional Transit Authority (GCRTA) and ATU Local 268 developed hands-on learning modules for rail vehicle technicians in the following areas: electrical, friction, HVAC, trucks and axles and couplers. These task sheets provide a method for subject matter experts (SMEs) to validate that a rail car apprentice can successfully complete the task required in these areas. These task sheets can be found at http://www.transittraining.net/careers/ladder_details/gcrt-hands-on-modules.

Transit Bus Original Equipment Manufacturer (OEM) Training

This project also undertook a study to examine the role original equipment manufacturers (OEMs) play in providing maintenance training to bus technicians throughout US public transit agencies. There are two types of OEMs, those that manufacture the entire bus and those that manufacture major subsystems of the bus such as engines, transmissions and door systems. Brand names have been omitted from the study and are referred to generically as bus OEMs or component OEMs. Doing so allows an objective assessment of the training services they provide without praising or criticizing any particular company by name. The full OEM study may be accessed at http://www.transittraining.net/careers/ladder_details/transit-bus-original-equipment-manufacturer-oem-training.

Performance Measurements Report

The performance measurements report for this project was based on four hypotheses that were established at the proposal stage. These hypotheses provide a framework for measuring the direct and indirect outcomes of the project using a variety of research methods.

Hypothesis 1: Young people involved in pathways activities will have a better understanding of and interest in frontline transit jobs, and demonstrate more substantive knowledge about job requirements and skills than they had before.

Method and Results: The method for testing this hypothesis involved conducting surveys, interviews and focus groups to determine if young people in pathways programs have a better understanding and more knowledge about job requirements and skills than they had before the program. An analysis of student journals and interviews with participants in the SEPTA-TWU Local 234 Summer Youth program—summarized in a Transit Industry Pipeline Concept paper, a PowerPoint and short video interview—provided strong evidence of a significantly improved understanding and significantly more knowledge about job requirements and skills pre-program as compared to post-program.

Hypothesis 2: Quality training programs based on national standards and local skills gap analysis data is likely to receive positive reactions from program participants and lead to learning gains.

Method and Results: Course evaluation forms were used to measure if the training provided under the project has received positive reactions from program participants and led to learning gains. The results were overwhelmingly positive with all participants rating the instructors and the training material as either good or excellent. At GCRTA, rail vehicle maintenance trainee post-assessment scores improved to an average of 75 percent, a 27 percent improvement.

Hypothesis 3: Standards-based career ladder training will improve safety and state of good repair of the capital equipment at the participating agencies.

Method and Results: Testing of this hypothesis involved training satisfaction surveys with workers and their supervisors to determine if standards-based career ladder training has improved safety and the state of good repair of capital equipment. These surveys are distinct from the course evaluations in that they focus on the overall training experience of trainees and supervisors and the impact of the training program on maintenance performance, rather than any single course. Almost all worker survey participants agreed that training had a significant impact on relationships with supervisors, ability to perform maintenance tasks, and safety.

Hypotheses 4a: Career pathways activities and models developed across different transit agencies operating in different contexts will produce lessons learned and best practices that will benefit and be applicable to career pathways work in new and varied transit locations.

Hypothesis 4b: Career ladder training and apprenticeship models developed across different transit agencies operating in different contexts will produce lessons learned and best practices that will benefit and be applicable to the establishment and training programs in new and varied transit locations.

Method and Results: Examining this hypothesis entailed gathering representatives from other agencies to participate in discussions about CPCL models and migrating lessons learned. The project's final conference provided the basis for a series of productive interactions, conference-based engagement and specific follow-up with new locations and organizations. The interactions, engagement and follow-up activities produced and used lessons learned and best practices across a set of locations, including new locations that are engaging in activities utilizing these lessons and practices.

The full Performance Measurements report may be accessed at http://www.transittraining.net/careers/pathway_details/performance-measurement-report.

National Dissemination of Project Related Work

While not initially set out in any of the specific original project milestones, the Center has, in the course of this grant, developed opportunities to disseminate information about successful Career Pathways and Career Ladders (CPCL) Models to national audiences. These conferences and seminars have been used as a springboard for national discussions about CPCL models in transit.

With funding from the Leadership Conference on Civil and Human Rights' Leadership Conference Education Fund, the Center produced a report titled "Pathways to Equity: Effective Transportation Career Partnerships." The report, which can be found at (http://www.transittraining.net/careers/pathway_details/pathways-to-equity-effective-transportation-career-partnerships), contains two case studies describing successful career pathways that include goals and outcomes related to career access for diverse groups from underserved communities- the Philadelphia Youth Career Pathways program and the LA Metro Project Labor Agreement.

On February 10, 2014, the Center organized and moderated a workshop for the Blue-Green Alliance's annual national Good Jobs Green Jobs conference on in Washington, D.C. Using materials that included work done under this CPCL project, and with the participation of TWU Local 234 and others, Center Executive Director Jack Clark moderated a session titled "Getting on Track Together: Creating Pathways to Transportation and Transit Careers for Community Members." More information about the Centers presentation can be found at <http://myemail.constantcontact.com/Transportation-Learning-Center-Weekly-Update-2-6-2014.html?soid=1109091349275&aid=xrzZkFfbZSE>.

From March to July 2014, the Center worked with Massachusetts Bay Transportation Authority (MBTA) to develop a TranSTEM initiative and Summer Jobs Program. Dr. Beverly Scott, a long-standing member of the Center's board, reached out to Brain Turner and Jack Clark for their expertise on effective systems of training for front-line workers. More information about these efforts can be found at: http://www.transportcenter.org/news_events/news_detail/center-expertise-in-training-partnership-building-contribute-to-summer-job

On March 31, 2014, the Center presented at a Transit Trainers Workshop at the National Transit Institute in Long Beach California. The presentation focused on the full system of training and qualification developed for rail car technicians through the recently completed TCRP E-7 project Establishing a National Transit Industry Rail Vehicle Technician Qualification Program. Center Executive Director Jack Clark noted that the system is relevant for all transit maintenance occupations. This system of qualifications was adapted during the course of this CPCL project by GCRTA and ATU Local 268 in the development of their rail technician apprenticeship program. More information about this presentation can be found at: http://www.transportcenter.org/news_events/news_detail/center-presents-on-standard-based-training-and-apprenticeship-for-frontline.

In May 2014, George Fields, Training Director for GCRTA, participated in an APTA webinar on Standards-Based Training. He talked about the development of their rail car apprenticeship program through this project. The webinar was moderated by Center Director of Special Projects, Brian Turner. More information about this presentation can be found at: http://www.transportcenter.org/news_events/news_detail/standards-based-training-cleveland-sacramento-transit-systems-join-the-cent.

In June 2014, the US Department of Labor recognized the Center as a "Transportation Industry Champion" for its involvement in developing and using the Transportation Competency Model. In addition to the national training standards, the Center has also developed joint labor-management competency-based career pathways and ladders programs for transit operations and maintenance occupations. An article featured on ETA's website includes a discussion of how the Center uses the model in some of the pathways partnerships developed through this FTA Innovative Workforce Development Project. The Center then included a piece about the article in our Weekly Update, which is disseminated to over 1000 transportation-related organizations. A link to the Weekly Update that includes a

link to the ETA website article is here: http://www.transportcenter.org/news_events/news_detail/center-recognized-as-transportation-industry-champion-by-the-u.s.-departmen



Transportation Learning Center Research Director Xinge Wang presenting on Transportation Industry Employment and Skills Data at the federal forum on Strengthening Skills Training and Career Pathways across the Transportation Industry

On October 7, 2014, close to 200 participants attended a federal forum on Strengthening Skills Training and Career Pathways across the Transportation Industry. This major convening of transportation workforce development experts was held by U.S. Departments of Transportation, Education, and Labor to delve deeply into the present and future workforce needs of all transportation modes. In addition to the general sessions, individual workgroups addressed topics relevant to maritime, aviation, transit, trucking, railroad and highway workforce development including retention, recruiting and training. Some of the individuals who attended this federal forum were also present at the Center Career Pathways and Career Ladders final conference. Center Executive Director and

Director of Research Xinge Wang presented an extensive data set of future workforce needs for the overall transportation industry which served as a foundation for modal group discussions. More information about this conference can be accessed at http://www.transportcenter.org/news_events/news_detail/transportation-workforce-development-comes-to-the-top-of-federal-agenda.

Career Pathways



For the Career Pathways segment of this project, the Center worked with labor and management partners in Philadelphia and Utah and with state education and Rahall Transportation Institute representatives in West Virginia. Each location and set of partners presented unique but interconnected opportunities to strengthen and create new pathways into transit and transportation careers.

Philadelphia, which already had established a cutting-edge Summer Youth Program and close relationships with the public high schools, was able to further develop its mentoring program related to the internship and establish a pilot Afterschool Program at a Philadelphia CTE high school that will run in full next year and possibly migrate to one other high school. Project participants also reached out to community colleges in the area to begin the process of credit assessment for transit-related preparation and training and wrote an initial proposal that outlined the steps needed to hold a city-wide transportation careers awareness conference.

Utah was able to begin systematic outreach to young people—with a particular focus on women—through a series of monthly meetings with a labor-management team. Team members went to high schools, hosted groups of high school and community college students at the agency and put together interactive programs that they brought to conferences to engage young people in frontline transit work. Using materials from Philadelphia, they engaged in labor-management discussions on how to establish a summer program and address challenges to creating pipelines for young people from high school.

The focus in West Virginia was on education programs, building on the existence of the statewide high school Transportation Specialization. Responding to the system's request for transit-specific materials, Center staff

developed two interactive transit modules that can be used by high school teachers in semester-long high school courses and provided the Assistant Superintendent with a detailed Transportation Careers poster (developed by Rutgers and adapted by the Center) they intend to circulate through the entire CTE high school system. These interactive modules will be discussed later in this report.

In addition, with the support of the Rahall Institute, the Center connected with Mountwest Community and Technical College, which was just adding a Transit Specialization to its Associates Degree in Transit Technology. The Center provided the program with information that assisted its Director with the assessment of academic credit for frontline transit occupations. The Center also worked with Mountwest to develop and disseminate a summary of the degree's Transit Specialization to agency and union partners interested in the degree program. This summary can be found at http://www.transittraining.net/careers/pathway_details/mountwest-community-technical-college. With the assistance of the Center, Mountwest presented its program at the final project conference as well as at the October 7 national transportation meeting held at the Department of Transportation.

In addition to any regional contacts made by agencies throughout their project work, the final conference in September provided CPCL locations the opportunity to engage in a dialogue with representatives from the FTA, the Department of Education's Office of Career, Technical, and Adult Education, and the Department of Labor's Office of Apprenticeship. Several project partners specifically planned national and state-level follow-up discussions in their next steps.

Detailed Core Curriculum Outline

The conceptual framework for this outline is based in the Transportation, Distribution and Logistics Competency Model that has been developed jointly by the U.S. Department of Labor's Employment and Training Administration and the U.S. Department of Transportation. (<http://www.careeronestop.org/competencymodel/competency-models/transportation.aspx>) The Transportation Learning Center was involved in the development of this model, and has been cited as an "industry champion" for its role in the model's development and implementation. Various segments of the curriculum outline address different levels of competency as set out in the model.

The primary materials in this Core Curriculum Outline were developed by the by Educational Data Systems, Inc. (EDSI) for the Keystone Development Partnership (KDP,) and reviewed and expanded by trainers and mechanics from partners Southeastern Pennsylvania Transportation Authority (SEPTA) and the Transport Workers Union (TWU) Local 234. The curriculum is intended for use in the After-School program established at Philadelphia's Mastbaum Career and Technical Education (CTE) High School, with the support of Philadelphia Academies, Inc. The outline is supplemented by the in-depth transit learning modules developed by the TLC for the West Virginia State Department of Education. In addition, the report notes a college-level curriculum developed by APTA that can be used in different settings. The report on the Core Curriculum outline can be found http://www.transittraining.net/careers/pathway_details/detailed-core-curriculum-outline-for-frontline-workers-in-transit

Obtaining Academic Credit for Transit Training

A Report from the Career Pathways and Career Ladders Project

Throughout the course of the Career Pathways and Career Ladders (CPCL) project, the Transportation Learning Center (the Center) has worked on local and national level community college credit opportunities as well as exploring additional options for workers in the industry to obtain academic credit for training and apprenticeship work. On the local level,

- Existing community college relationships have been strengthened where they already existed in Utah
- New relationships have been created in Philadelphia, Cleveland and Utah
- A new transit-specific program has been established in West Virginia. This program, offered by Mountwest Community and Technical College, is an entirely online program accessible to workers from transit agencies throughout the country. More information about the Mountwest transit- specific program can be found on their website at <http://www.mctc.edu/program/transportation/transit>.

On the national level the Center has used the CPCL project's meetings, webinars and conferences to inform the project's Pathways and Ladders partners and others participating about the U.S. Department of Labor's Registered Apprenticeship-College Consortium (RACC) and the value of establishing Registered Apprenticeships in transit agencies to more effectively facilitate workers' ability to obtain college credit for their training and work experience. In addition, the Center has opened discussions with two national college credit assessment organizations—the American Council on Education (ACE) and the National College Credit Recommendation Service (NCCRS.) The full report can be accessed at http://www.transittraining.net/careers/pathway_details/obtaining-academic-credit-for-transit-training.

Philadelphia, PA

The Southeastern Pennsylvania Transit Authority (SEPTA) is the sixth largest transit system in the US, providing ten billion trips annually across an unusually wide range of transportation modes – three kinds of buses (diesel, hybrid and electric), heavy rail (subways), light rail and streetcars and commuter rail service to outlying counties. SEPTA has over 9,200 employees, 80 percent of them in direct operations and maintenance of transportation service. Frontline skilled workers not only move up the skilled technical worker ladder, but have the opportunity to move into a range of supervisory and management roles throughout their career with the agency.

Transport Workers Union (TWU) Local 234 represents over 5,000 hourly blue collar members in SEPTA's transit service (bus and transit rail). It is the second largest transit Local in TWU International, which also has transit locals in New York (the largest in the country), Miami, Houston, San Francisco and Columbus, Ohio, among other locations. The last several elected presidents of Local 234 have been African-American, continuing a pattern of top elected leadership from minority communities in TWU's transit locals and in many other local unions in the transit industry, especially in larger cities. TWU Local 234's elected officials and paid staff-- as well as many officials and staff at the international union level--started as frontline workers in SEPTA, demonstrating the existence of another set of potential career ladders and opportunities in this industry.

The Keystone Development Partnership (KDP) supported the collaboration between the Southeastern Pennsylvania Transit Authority (SEPTA) and Transport Workers Union Local 234 (TWU 234) to create pathways for young adults in transportation. KDP is a nonprofit organization associated with the Pennsylvania AFL-CIO that facilitates joint labor-management partnerships, with a focus on training and skill building for new and incumbent workers. KDP's largest and oldest project is the Keystone Transit Career Ladder Partnership, created in 2001 with assistance from the Center. The partnership—with a history going back to the establishment of the Summer Youth Program eight years ago—is based on an understanding of the need to replace older retiring workers as well as a commitment to providing career opportunities to young people in the communities SEPTA serves, communities that TWU members come from and still live in.

During the initial project conference, representatives from SEPTA, TWU Local 234 and KDP (which served as the Center's on-site contract staff facilitating workplan implementation) discussed possible activities to be carried out during the course of the grant including:

- Meeting with high schools in the five counties sharing curriculum and discussing options for setting up project-based transportation-related pieces of curricula;
- Developing an afterschool program for high school students focused on transportation;
- Re-structuring the current paid summer job shadowing program

*“Looking forward to the future” -Daryl Mack
(TWU Local 234)*

*“The grant timing was perfect” -John Buckner
(SEPTA)*

*“Youth work is the best thing I have ever done “ -Stu Bass
(KDP)*

to make it more effective;

- Examining a possible internship on the commuter rail side of the agency;
- Continuing to develop mentoring programs and mentoring options; and
- Pursuing college credit for training curriculum.

Public Transit After School Program

SEPTA, TWU Local 234, and KDP worked together with the Philadelphia School District and Philadelphia Academies, Inc. to develop an afterschool program to couple with their summer youth program. This after school program provides real life learning experiences coordinated with in-class content. It offers students insights into job opportunities in the public transit industry, while in turn, preparing them for a variety of jobs that require mechanical, electronic, and electrical skills that can be used outside of the public transportation industry. The most valuable learning for the students is the job readiness and the opportunity to acquire skills for employment.

The Public Transit After School program pilot started at Mastbaum High School in Philadelphia in late May 2014 and ended in June. Students interested in a career in public transportation attended the program once a week for three weeks. The program served as a transition for Mastbaum students considering application for the SEPTA TWU Summer Youth program. It set the stage for a longer and more in-depth after school initiative at Mastbaum and replication at other schools such as Swenson Arts and Technology High School.

The three sessions that were piloted at Mastbaum exposed students to the transportation industry. The first session was an introductory session about careers in public transit and the role of the unions in the transit industry. The second session presented an overview of the work of bus maintenance mechanics and students were given guidance on how to interview for the Summer Youth program. For the final session, students toured the Frankford shop at SEPTA and received preparation for application to the Summer Youth Program. On June 6, 2014, Mastbaum hosted an awards event for business partners that supported the program for the students.



Mastbaum Principal Dr. David Bowman, TWU Local 234 Vice President Daryl Mack, former Apprenticeship Coordinator John Johnson, Jr., and SEPTA Trainer John Miller

Eleven of the eighteen positions available in the SEPTA TWU Summer Youth Program were filled by Mastbaum students who attended the after school program. Moving forward, SEPTA, TWU Local 234 and KDP will continue to work with the Philadelphia Academies, the Philadelphia Youth Network and the School District of Philadelphia to coordinate a plan for expanding the after school program to more schools. They will also explore possible externships for Career and Technical Education (CTE) teachers to come to SEPTA to learn more about transit opportunities for their students.

SEPTA TWU Summer Youth Program

The sixth year of the SEPTA TWU Summer Youth Program ran from late June until mid-August 2013. The seventh year of the SEPTA TWU Summer Youth Program ran from late June until mid-August 2014. The program expanded from fifteen to eighteen students the seventh year with candidates being referred by their teachers. In order to be eligible for the program, students had to have completed at least two years of study at their Philadelphia CTE high schools, be recommended by their teachers, and be capable of passing a drug screening, background check, and medical exam before starting the program. Program participants applied on line and participated in a formal interview process. A panel of SEPTA recruitment and operations managers along with the TWU Apprenticeship Coordinator interviewed 25 candidates. Eighteen candidates and two alternates were accepted into the program.



Participants at the 2013 SEPTA TWU Summer Youth program orientation

Selected participants worked eight hour days, five days per week, from six a.m. to three p.m. They were not allowed to be absent or late more than three times in order to successfully complete the program. Students received on the job training for public transit vehicle maintenance, and each student was encouraged to keep a journal of their experiences. After completion of the Transit Career Summer Youth Program, students were eligible to apply for the available apprenticeship positions at SEPTA.

Public Transit Curriculum for High Schools

KDP gathered curriculum modules based on job profiles conducted by the Keystone Transit Career Ladder Partnership. KDP presented the modules to SEPTA bus and light rail vehicle instructors for validation. Upon approval, KDP provided presentations of the curriculum to CTE instructors at Mastbaum and Swenson High Schools, who expressed gratitude for the information. KDP submitted the modules to the SEPTA Trainers and the Center. The next steps are to distribute the curriculum to regional CTE schools in the five county region served by SEPTA.

SEPTA-TWU Career Pathways Program and Community Colleges

SEPTA training managers and TWU leadership have expressed interest in college credit for apprenticeship classes. In collaboration with SEPTA and TWU Local 234, KDP facilitated meetings for SEPTA Trainers, TWU Local 234 and community college officials in four of the five counties served by SEPTA. KDP collaborated with the Collegiate Consortium for Workforce and Economic Development (the Consortium). The Consortium is a partnership of Drexel University and five area community colleges: Community College of Philadelphia, Delaware County Community College, Bucks County Community College, Camden County College and Montgomery County Community College. The Consortium provides a comprehensive, coordinated approach to developing a highly skilled workforce for the region. The combined efforts of the five community colleges, which emphasize advanced technical training, and a university, which offers advanced education, creates a unique model for education and training. More information about the Consortium can be found at http://www.collegiateconsortium.org/about_us.asp.

In March 2014, SEPTA training managers met with the Consortium Project Manager, representatives from Bucks County Community College and the Community College of Philadelphia, along with representatives from the Transportation Learning Center (the Center). KDP presented the initiative to align SEPTA TWU Apprenticeships with the regional community colleges for credit. KDP also contacted the Dean of the Montgomery County and Delaware County Community Colleges Dean of Workforce Development and Professional Studies. Each college has programs that support apprenticeships.

SEPTA initiated discussions with the colleges to determine the process to align apprenticeship courses with college credit. The apprenticeships at SEPTA are generic, with appendices for each of the individual programs such as Bus Mechanic, Elevator/Escalator Specialist, and Rail Car Maintainer. The Consortium, the Community College of Philadelphia and the Bucks County Community College have similar programs with existing apprenticeships in the region. In addition to the Consortium, the Center introduced the Mountwest Community and Technical College Degree Program in Transportation Technology, Specialization in Transit for possible discussions.

On September 2014, KDP met with the Consortium, the Community of Philadelphia and Delaware County Community College to review the SEPTA TWU Bus Apprenticeship curriculum. The Delaware County Community College Dean of Workforce Development and Community Education offered to provide a summary for a project plan

to present to SEPTA and TWU. The colleges will need the course content (curriculum outline), learning outcomes, time in class, and time on the job linked to the apprenticeship education program; some colleges will require a description of instructor qualifications. On the job experience is evaluated case by case. For veterans in the transit workforce, some colleges accept credit for training that has been assessed by the military. The Community College of Philadelphia Curriculum Coordinator is the individual responsible for the evaluation of programs such as apprenticeships. Once the project plan and evaluation information becomes available, KDP will schedule a meeting to discuss. The colleges and industry representatives will also discuss how a college initiative might be marketed to apprentices and how to address apprentice concerns about the cost of a college degree.

Salt Lake City, UT

Utah Transit Authority (UTA) operates a fleet of more than 600 buses and paratransit vehicles, 400 vanpools, 146 light rail vehicles, 63 commuter rail cars and 18 locomotives in a 1,600 square mile service area that stretches over six counties from Payson to Brigham City. The Authority serves the largest segment of population in the State of Utah, approximately 1.8 million and operates in one of the largest geographical service areas of any transit agency in the U.S.

Nationally, the Amalgamated Transit Union (ATU) is the largest labor organization representing transit workers in the United States and Canada. It is composed of bus drivers, light rail operators, maintenance and clerical personnel and other transit and municipal employees. Local 382 is the sole bargaining representative for all of UTA's bus operators and parts and maintenance workers.

During the initial project conference, representatives from UTA and ATU Local 382 discussed possible workplan activities that they would like to implement during the course of the grant including:

- Exploring the possible development of internships;
- Strengthening recruitment of young woman, especially through using current women employees to go out and recruit at high schools and colleges in the area;
- Continuing to enhance the current outreach program through visiting high schools and job corps locations, participating in career fairs, and visiting vocational centers two to three times a year;
- Exploring the possibility of using Cyber recruiting to enhance the effectiveness of their job application process; and
- Exploring the development and distribution of career pamphlets to be used in high schools, career centers, vocational schools, and colleges.

Career Fair

Thirty-two hundred junior and senior high school students attended a two-day high school career fair in April 2014. Outreach team co-leader Mike Harowitz from ATU (Bus Maintenance) and team members Doug Malmborg and Imelda Piep (Bus Operations), Denis Davis (Maintenance Training), and Charleen Solyom (Human Resources) participated in one of the most successful events yet: Construction Career Days at Davis Applied Technology College, aimed at introducing junior and senior high school students to the possibility of a career at UTA and engaging them in interesting and fun ways. A 2013 CNG bus provided by Central Division was used as a visual aid. Maintenance Training provided a group of engine, brake and steering parts and the students were invited to properly identify the parts for a chance to win a UTA T-Shirt. Both the bus and the game were well received by the students.

Keys to Success

Over 70 participants attended UTA'S Keys to Success events, which were held at Jordan River Rail Service Center on the evenings of May 13 and June 10. The events introduced high school and college bound scholarship recipients, their parents and high school counselors to UTA transit careers. These events were focused on increasing their understanding of UTA job opportunities, including education, preparation and training requirements. Human Resources staff presented each scholarship recipient with a flash drive containing information about careers at UTA and escorted them through Jordan River where they toured and asked questions about the control room, maintenance of way, the parts room and various Maintenance Training, Transit Police and Special Services

Maintenance departments. The event helps UTA address a central workforce challenge faced by all transit agencies: the huge demand for many more skilled frontline transit workers, especially with projected retirements and industry growth over the next decade.

Other Conferences, Outreach to Women

In addition to the large scale recruitment and engagement activities noted above, members of the joint labor-management outreach committee participated in over a dozen recruitment-related meetings across the city and state to meet with potential applicants and make sure they were aware of the career opportunities at UTA. A review of their joint committee staffing and assignments indicates their ongoing commitment to involving women in the recruitment process. Of the sixteen members of the joint team, ten were women. In addition, the team identified thirteen UTA female labor and management employees who would be assigned through the project period to attend outreach activities and target women for recruitment both inside and outside of UTA.

Additional Engagement and Recruitment Initiatives

While much of the team's focus was on conferences and job fairs, they also initiated a series of other outreach and awareness activities to bring community awareness to the range of careers available in transit. In the course of the project, the team:

- Developed bus boards to advertise operator positions, along with general display advertisements and signage on the inside of buses
- Developed an information and recruitment pamphlet
- Modified their online CyberRecruiter to provide applicants with notification when new positions open up
- Created a "Work for Us" button on the UTA Facebook page
- Developed a series of recruitment videos about different frontline positions for the UTA website, including videos that focused on women

West Virginia

The West Virginia State Department of Education is committed to programs in the public school system that produce students who can be part of a highly skilled workforce. The statewide program has: twenty-five high schools with five or more occupational areas; twenty-three County Centers with five or more occupational areas; seven Multi-County Centers; sixteen Colleges/Universities offering career/technical education; specialized facilities offering career/technical education. One of the occupational specializations in the high schools is transportation.

As noted on their website, the Nick J. Rahall, II Appalachian Transportation Institute (RTI) is a leader in multimodal transportation and economic development in West Virginia and the surrounding thirteen state Appalachian Region. RTI is recognized by the U.S. Department of Transportation (DOT) for transportation excellence focused on applied technology, research, education, outreach and training. RTI is also the lead research institution in the Multimodal Transportation and Infrastructure Consortium (MTIC) funded through the [Research and Innovative Technology Administration \(RITA\)](#) of the U.S. Department of Transportation.

During the initial project conference, representatives from the West Virginia Department of Education and the Rahall Transportation Institute discussed possible workplan activities to be implemented during the course of this grant including:

- Using the current interactive Science, Technology, Engineering, and Math (STEM) software to develop transit-based content with a variety of scenarios for students
- Building on the existing West Virginia summer career and technical education honors academy to plan a Summer 2014 academy that will focus on transportation and transit
- Sponsoring a training summit to expand capacity for community colleges to train diesel mechanics; and
- Doing case studies on current high school transportation track and community college transportation degree programs

Interactive Learning Modules

In addition to the Core Curriculum Outline, the Center has developed two new online interactive modules for the West Virginia State Department of Education's Division of Career and Technical Education. These modules, titled "Transit Bus Exhaust Emissions and Costs" (http://www.transittraining.net/careers/pathway_details/transit-bus-exhaust-emissions-and-costs-making-the-right-decision-for-a-sma) and "Highway Grade Crossing Safety and Costs" (http://www.transittraining.net/careers/pathway_details/highway-grade-crossing-safety-and-costs-making-the-right-decision-for-a-sma), focus on the technical, financial and policy elements as well as analytical and communication skills needed to make "the right decision for a small city." These modules can be used online or in physical classrooms in a variety of Career and Technical high school programs as well as community college and other education settings to prepare potential young people and others in the pathways system for careers in transportation. As with the Core Curriculum Outline, the competencies developed in these modules connect to competencies noted at all levels of the pyramid, with an emphasis on competencies related to the four middle levels (Academic, Workplace, Industry-Wide and Industry-Sector.).

Dissemination of APTA Transportation Careers Poster

The Center shared an American Public Transportation Association (APTA) transportation careers poster with our West Virginia partnership to be disseminated state-wide CTE students state-wide to inform them about opportunities for transportation careers (Figure 2.) The poster was developed by the Heldrich Center at Rutgers University, and then modified—with the Heldrich Center's permission—by the Transportation Learning Center to meet West Virginia's needs.

Central Services and Administration

Public Transportation Management

- Division Manager**
Division Managers are often in charge of a geographic area or core system within a Department. They ensure services are delivered effectively to a given area and coordinate with Department Directors to implement best policies and training.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Division Director**
Division Directors manage the operations of a given department, such as all of the services. They provide strategic and policy direction, implement needed staff training and coordination, manage capital projects, regulations, and other large-scale department operations.
 * High School Diploma or GED, 1 to 7 years of experience, BA/BS in Public Administration or equivalent (required)
 \$ 150,000 - 280,000

Public Transportation Capital Project Development and Planning

- Chief Financial Officer**
Chief Financial Officers lead the financial operations of transit agencies and other Public Transportation agencies. They review or arrange financial decisions for the agency and oversee everything from payroll and purchasing to grants, accounting, and the investment of agency funds.
 * BA in 10 years of experience
 \$ 170,000 - 240,000
- Chief Accounting Officer**
Chief Accounting Officers manage the financial operations of transit agencies and other Public Transportation agencies. They review or arrange financial decisions for the agency and oversee everything from payroll and purchasing to grants, accounting, and the investment of agency funds.
 * BA in 10 years of experience
 \$ 170,000 - 240,000

Route Planning and Scheduling

- Traffic Specialist**
Traffic Specialists use specialized software and traffic analysis techniques to analyze traffic patterns. They are important for determining routes and schedules, as well as for planning capital projects. They work with other planners on how to address traffic-related issues and develop solutions.
 * BA in Transportation Planning, Master's degree preferred
 \$ 140,000 - 210,000
- Transit Analyst**
Transit Analysts use specialized software and traffic analysis techniques to analyze traffic patterns. They are important for determining routes and schedules, as well as for planning capital projects. They work with other planners on how to address traffic-related issues and develop solutions.
 * BA in Transportation Planning, Master's degree preferred
 \$ 140,000 - 210,000

Route Planning and Scheduling Crew Service Planning and Scheduling

- Head Driver Specialist**
Head Driver Specialists are responsible for managing the operations of a transit agency. They are responsible for ensuring that all vehicles are properly maintained and that all drivers are properly trained and scheduled.
 * High School Diploma or GED, BA/BS in Transportation Planning, Master's degree preferred
 \$ 145,000 - 200,000
- Head Driver Specialist**
Head Driver Specialists are responsible for managing the operations of a transit agency. They are responsible for ensuring that all vehicles are properly maintained and that all drivers are properly trained and scheduled.
 * High School Diploma or GED, BA/BS in Transportation Planning, Master's degree preferred
 \$ 145,000 - 200,000

Route Planning and Scheduling Crew Service Planning and Scheduling

- Head Driver Specialist**
Head Driver Specialists are responsible for managing the operations of a transit agency. They are responsible for ensuring that all vehicles are properly maintained and that all drivers are properly trained and scheduled.
 * High School Diploma or GED, BA/BS in Transportation Planning, Master's degree preferred
 \$ 145,000 - 200,000
- Head Driver Specialist**
Head Driver Specialists are responsible for managing the operations of a transit agency. They are responsible for ensuring that all vehicles are properly maintained and that all drivers are properly trained and scheduled.
 * High School Diploma or GED, BA/BS in Transportation Planning, Master's degree preferred
 \$ 145,000 - 200,000

Route Planning and Scheduling Crew Service Planning and Scheduling

- Head Driver Specialist**
Head Driver Specialists are responsible for managing the operations of a transit agency. They are responsible for ensuring that all vehicles are properly maintained and that all drivers are properly trained and scheduled.
 * High School Diploma or GED, BA/BS in Transportation Planning, Master's degree preferred
 \$ 145,000 - 200,000
- Head Driver Specialist**
Head Driver Specialists are responsible for managing the operations of a transit agency. They are responsible for ensuring that all vehicles are properly maintained and that all drivers are properly trained and scheduled.
 * High School Diploma or GED, BA/BS in Transportation Planning, Master's degree preferred
 \$ 145,000 - 200,000

Route Planning and Scheduling Crew Service Planning and Scheduling

- Head Driver Specialist**
Head Driver Specialists are responsible for managing the operations of a transit agency. They are responsible for ensuring that all vehicles are properly maintained and that all drivers are properly trained and scheduled.
 * High School Diploma or GED, BA/BS in Transportation Planning, Master's degree preferred
 \$ 145,000 - 200,000
- Head Driver Specialist**
Head Driver Specialists are responsible for managing the operations of a transit agency. They are responsible for ensuring that all vehicles are properly maintained and that all drivers are properly trained and scheduled.
 * High School Diploma or GED, BA/BS in Transportation Planning, Master's degree preferred
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

Public Transportation Business Operations

- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000
- Customer Service Representative**
Customer Service Representatives provide information and assistance to transit agency customers. They are responsible for ensuring that all customers are properly served and that all issues are resolved.
 * High School Diploma or GED, 1 to 5 years of experience in operations or training
 \$ 145,000 - 200,000

moving

functional areas, job groups, & skills

VEHICLE OPERATIONS (8 OUT OF 10 JOBS)
Over half of all jobs in the nation's largest urban public transit agencies (National Transit Database, 2008). Many of these jobs are in a broad set of smaller agencies and contractors. A diverse group of workers ensure that everything—from buses and trains to ferries and other vehicles—run safely and on time. Some common tasks in the operations area include the Amalgamated Transit Workers Union, the American Federation of State, County, and Municipal Employees, the Marine Employees' Committee, the Service Employees International Union, Seafarers International Union of North America, and the International Union of the Pacific.

VEHICLE MAINTENANCE (2 OUT OF 10 JOBS)
About 20% of those at large urban transit agencies, or nearly 50,000 people, work in Vehicle Maintenance (National Transit Database, 2008). These workers, who can also be found at smaller agencies and contractors, are responsible for keeping buses, commuter trains, subways, and other vehicles moving. Workers in these jobs repair, inspect, clean, and otherwise maintain Public Transportation vehicles as well as oversee the inventory of parts and tools needed to keep vehicles operational. Examples of roles active in the Vehicle Maintenance area, especially in rail agencies, include the Amalgamated Public Transportation Union, the Service Employees International Union, the Brotherhood of Railroad Signalmen, and the American Railroad Union, State, County, and Municipal Employees.

FACILITIES, TRACK, & ROAD MAINTENANCE (1 OUT OF 10 JOBS)
Non-Vehicle Maintenance positions make up about 11% of jobs in urban transit agencies, or over 20,000 jobs, according to the National Transit Database (2008). Also found at other types of Public Transportation employees, these individuals maintain the facilities and other equipment Public Transportation employees are responsible for—both buildings, to signs and signals, to street tracks. This area includes building technicians and other skilled workers who maintain Public Transportation-related equipment. Key unions active in the Facilities, Track, & Road Maintenance area include the Amalgamated Transit Union, the Service Employees International Union, the International Brotherhood of Electrical Workers, and the American Federation of State, County, and Municipal Employees.

moving

functional areas, job groups, & skills

CENTRAL SERVICES AND ADMINISTRATION (OUT OF 10 JOBS)
Central Services and Administration has the lowest number of jobs in the Public Transportation industry, but one of the most diverse areas with respect to the types of jobs available and skills required. According to the National Transit Database (2008), this area accounts for just 10% of jobs at urban transit agencies. Their large, urban and suburban counterparts in terms of the number and structures of Central Services and Administration jobs. At smaller agencies and contractors, workers often perform several roles at once. Entry-level workers may belong to the Office and Professional Employees International Union or other labor unions, but many workers in this area are managers and professionals who are not eligible for union membership. Further, several functions in this area may be contracted services.

KEY SKILLS FOR PUBLIC TRANSPORTATION JOB GROUPS
The following table identifies key skills that are needed for many, if not all, occupations in the 20 Job Groups found across 4 Functional Areas in Public Transportation.

moving

functional areas, job groups, & skills

FUNDAMENTAL SKILLS FOR PUBLIC TRANSPORTATION JOBS
Key skills that nearly all workers in all levels of jobs in the industry require include:

Basic Academic and Work Readiness Skills (including Punctuality); High school level reading and math; basic communication and interpersonal skills, and other basic skills are important. Punctuality is especially important in Public Transportation, particularly in vehicle operations.

Understanding Public Transportation Regulations, Agency Policies, and Other Legal Requirements; Workers must be knowledgeable about traffic, vehicle operations, and other regulations that apply to their jobs, as well as aware of agency policies and procedures and other applicable laws. Many workers, especially vehicle operators, must pass background checks and drug tests as well.

Lifelong Learning; Public Transportation trades unions and professional development staff offer training to public transportation workers at all levels. Workers are expected to continually improve their skills and knowledge both to advance and to stay current with changing regulations, rules, and technology.

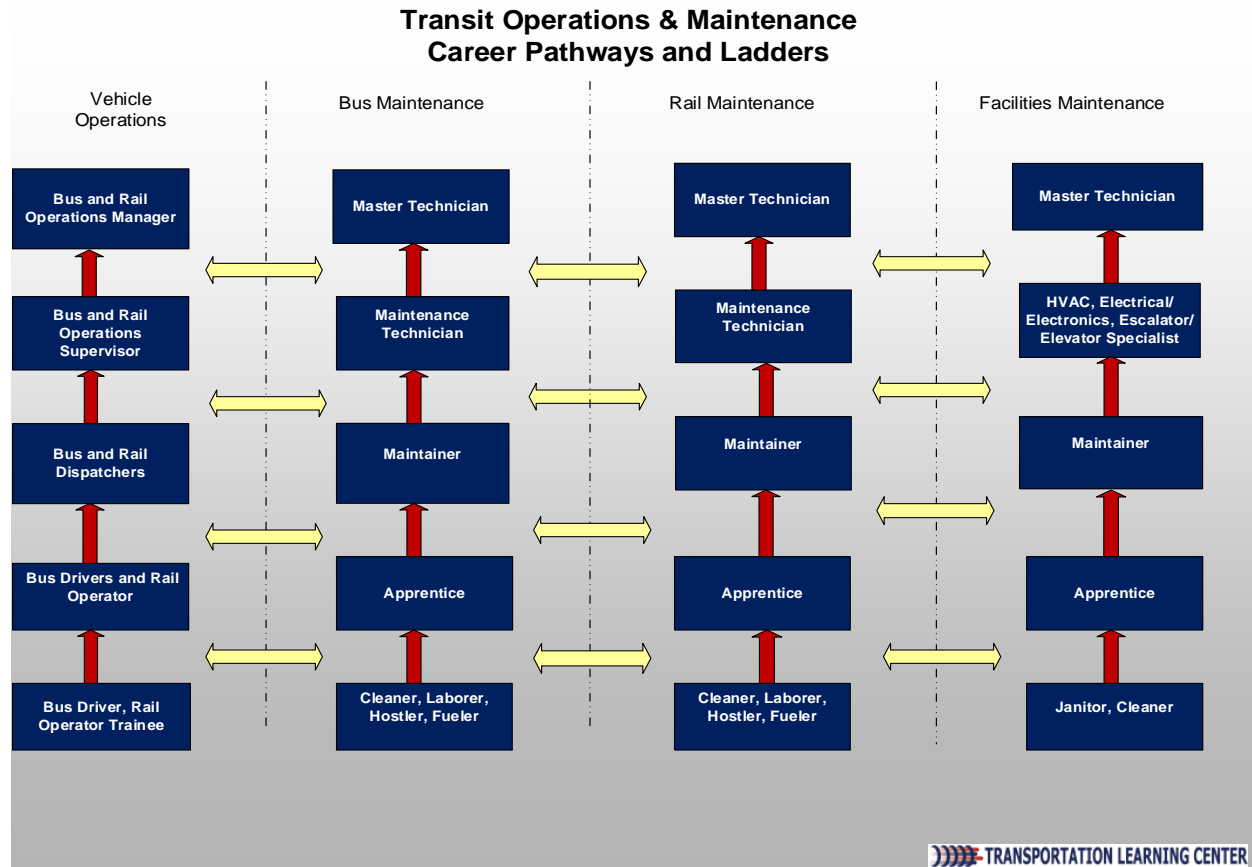
Computer Skills; Workers at all levels need at least basic computer literacy skills to operate on-board vehicle computers, digital diagnostic equipment, and other types of computer technologies.

Decision-Making and Problem-Solving Skills; Public Transportation is a fast-moving industry that requires nearly all workers to solve problems in their field. Workers must take initiative and correct supervisors when necessary, but they may need to respond ranging from mechanical failures to passenger disruptions quickly and independently.

Safety and Health Skills; In Public Transportation, workers are entrusted with moving members of the public safely to their destinations. All workers must be keenly aware of health and safety precautions to protect themselves, their coworkers, and the public.

Leadership and Supervisory Skills; While not required for many entry-level jobs, the ability to develop strong supervisory and leadership skills is key to getting promoted and advancing to higher levels of compensation in Public Transportation. At some point, nearly all workers will need these skills.

Career Ladders



Apprenticeship is a combination of on-the-job training (OJT) and related classroom instruction under the supervision of a journey-level craft person or trade professional in which workers learn the practical and theoretical aspects of a highly skilled occupation. Registered Apprenticeships tie directly to national and state standards approved by U.S. and state departments of labor. The key to a successful apprenticeship program is having equal labor and management participation during the formation and implementation of the program.

The goals of the career ladders portion of this project were to create opportunities for advancement within transit technical occupations. The goal of the program was to initiate and complete career ladder training for new and incumbent workers and to initiate apprenticeship training for new and incumbent workers. Over the course of this grant 315 new and incumbent workers have initiated and completed career ladder training. Nineteen new and incumbent workers have initiated apprenticeship programs.

For this project, the Center worked together with Greater Cleveland Regional Transit Authority (GCRTA)/ATU Local 268 and Des Moines Area Rapid Transit (DART)/ATU Local 441 to develop new apprenticeships in rail vehicle maintenance and bus maintenance, respectively. Working together with representatives in Cleveland and Des Moines, this project was able to successfully create a ladder of opportunity for new and incumbent workers. Not only did these agencies develop apprenticeship programs, they also validated courseware and performed skill gaps analysis.

Mentor Training

In mid-June and early July KDP provided a train-the-trainer session for Transport Workers Union Local 234 members who volunteered to be mentors for the SEPTA TWU Summer Youth Program. Ten TWU members attended the two one-day sessions. SEPTA provided the facilities and time for the mentors designated by TWU. TWU Local 234 Apprenticeship updated the mentors about the program, which started with an orientation night event for the students and parents at the TWU hall. The mentors appreciated hearing about the background of the SEPTA TWU Summer Youth Program and the application process for the high school students.

The one-day training included an introduction to learning styles and teaching techniques for the mentors. The mentors participated in exercises and role playing scenarios to help them improve their mentoring skills. Their work experiences provide the foundation for the students interested in pursuing careers in public transit. Some mentors who recently graduated from the TWU SEPTA Apprenticeship said that they volunteered to be mentors so that they could “give back” to the training program. Students who attended the Summer Youth Program in previous years expressed their appreciation for the mentor and talked about how they learned from these qualified role models.

Cleveland, OH

In Ohio, the Transportation Learning Center (Center) partnered with the Greater Cleveland Regional Transit Authority (GCRTA) and Amalgamated Transit Union Local 268 (ATU 268) to develop an apprenticeship program for rail vehicle technicians. GCRTA is the 30th largest public transportation agency in North America. In 2013, GCRTA transported over 49.2 million people. The GCRTA fleet consists of 60 rapid transit cars, 48 light rail, 492 buses, and 80 paratransit shuttles that serve 18 rapid transit stops, 34 light rail stops, and 8,557 bus stops. GCRTA serves Cleveland, Ohio and the surrounding suburbs of Cuyahoga County.

ATU Local 268 is an affiliate of the Amalgamated Transit Union (ATU), a union that represents transit and school bus operators and mechanics. This local represents transit operators and mechanics within the Cleveland Ohio public transportation system. It has approximately 2,450 members who are employed within GCRTA.

“Good to see company and union working together, sharing information, and solving problems”

-Ed Kawecki (GCRTA)

GCRTA and ATU Local 268 had two goals when deciding to commit to the program to develop a rail car apprenticeship program: to provide the training department more authority over trainees to ensure that they received broad-based training in all areas of the rail vehicle shops; and to allow other occupations with no technical knowledge to enter into a rail vehicle maintenance occupation and receive the training necessary to learn the trade.

Using the presentation that they showed to CPCL locations at the initial project conference as a starting point, GCRTA and ATU Local 268 discussed developing their new apprenticeship program for rail car mechanics. They examined barriers to implementation and created a list of questions and suggestions that needed to be discussed at the next policy committee meeting that included the GM and the Local Union President. They decided to develop a basic structure for the apprenticeship program to be presented at a policy committee meeting in July 2013. Ideas reviewed for possible implementation into the new rail car technician apprenticeship program included:

- Restructuring the current training program from a 6 month training cycle to a 24 month training cycle;
- Restructuring grade levels to fit the TCRP E7 Qualification program structure;
- Reviewing courseware to determine how it aligns with the APTA rail standards and identifying any additional courseware that is needed for training; and
- Defining mentors roles and responsibilities within the apprenticeship program

Using these discussions, the GCRTA and ATU Local 382 representatives developed the entire framework for their pilot apprenticeship program.

Rail Vehicle Apprenticeship

As mentioned above, the key to a successful apprenticeship program is having equal labor and management participation during the formation and implementation of the program. At GCRTA, the Center was grateful to be working with a Chief Executive Officer (CEO) and a President Business Agent who were both excited about creating the new apprenticeship program and willing to work together to come to a consensus. As such, the Center arranged an initial meeting with the GCRTA CEO and his representatives and the ATU President Business Agent and his representatives. This initial meeting was held to provide the transit agency and representatives with the details of the grant, the expected deliverables and to answer any questions that they may have had about the grant.

Based on these discussions, GCRTA and ATU Local 268 worked together to create a draft apprenticeship structure. The draft apprenticeship program laid out the foundation for:

- The Joint Apprenticeship Committee – the minimum amount of members, how decisions were made, duties and responsibilities of the committee
- Apprenticeship Qualifications- age requirements, educational requirements, tests to be conducted, license requirements
- Apprentice Selection by Committee
- Term of Apprenticeship
- Probationary Period
- Hours of Work
- Wage Progression
- Evaluations & Advancement of Apprentice
- Responsibilities of Apprentice

To date nineteen mechanics have initiated training through this draft apprenticeship structure. *Due to a change in union leadership, the official apprenticeship is still awaiting final signature.

Training Plan

Based on a project the Center recently completed--TCRP E7: Establishing a National Transit Industry Rail Vehicle Technician Qualification Program: Building for Success--GCRTA and ATU Local 268 worked together to draft their apprenticeship training plan. Using the TCRP E7 Module structure they created a four semester, twenty-six week training program for apprentices covering six modules in rail vehicle maintenance. Those six modules are Module 201 Couplers, Module 202 Trucks and Axles, Module 203 Propulsion and Dynamic Braking, Module 205 Friction Brakes, Module 206 HVAC, and Module 207 Current Collection. During each semester, apprentices will spend their weeks as follows:

- Week 1-4: Instructor/Classroom
- Weeks 5-7: Hands on Training
- Week 8: Preparation for rotation into shop with Apprenticeship Coordinator
- Weeks 9-24: Instruction on shop floor in departments
- Week 25: Review of material learned
- Week 26: Debrief and evaluation with Apprenticeship Coordinator

Courseware Validation

With the creation of the new training plan, there was a restructuring of the courseware for each semester within the GCRTA Apprenticeship structure. Cleveland agreed to work with the Center's resident expert in national standards, John Schiavone, to validate two segments of their courseware to be implemented within the apprenticeship program: Module 203- Propulsion & Dynamic Braking and Module 205 – Friction Brakes. The validation process looks at learning objectives from the applicable standards and evaluates if those standards are supported by courseware within the agency.

The Center worked together with labor and management to list the courseware that GCRTA uses to deliver training for Modules 203 and 205. Once the courseware was listed, labor and management reviewed the learning objectives to determine if supporting courseware existed. Courseware could consist of a variety of pieces, including written material, manuals, PowerPoint presentations, instructor observation. Some learning objectives were not applicable to the course, because they were covered elsewhere in another related course, or the technology referenced in the objective does not apply to the agency's particular equipment. In those cases the learning objective was removed from the validation process

Once the courseware for each standard was identified, the labor management team also identified whether each learning objective was supported by hands-on exercises. It is not expected that all learning objectives will be complemented with hands-on exercises, but the Center recommends that at least fifty percent of training should consist of hands-on training. As shown in Table 1 and Table 2, GCRTA's Rail car maintenance courses contained one-hundred percent of hands on training.

Table 1: Results of GCRTA Module 203: Propulsion & Dynamic Braking Courseware Validation

Number of Learning Objectives (LOs) Contained in the Standard	Number of LOs Applicable to the Course Being Evaluated	Number of Applicable LOs Supported by Courseware	Number of Applicable LOs Supported by Hands-On Training
Total: 273	Total: 86 % of all LOs: 32%	Total: 86 % of applicable LOs: 100%	Total:86 % of applicable LOs: 100%

Table 2: Results of GCRTA Module 205: Friction Brakes Courseware Validation

Number of Learning Objectives (LOs) Contained in the Standard	Number of LOs Applicable to the Course Being Evaluated	Number of Applicable LOs Supported by Courseware	Number of Applicable LOs Supported by Hands-On Training
Total: 104	Total: 102 % of all LOs: 98%	Total: 102 % of applicable LOs: 100%	Total: 100 % of applicable LOs: 100%

TCRP E7 Hands-on Assessment



GCRTA rail technicians performing hands-on assessment for Module 203: Propulsion & Dynamic Braking

GCRTA and ATU Local 268 worked together to tailor the courseware primers developed in the TCRP E-7 project to their individual needs. Using these primers and the American Public Transportation Association (APTA) Rail Vehicle Maintenance standards developed by a joint labor management rail vehicle training committee, they completed a training gap analysis of their courseware and have begun the development of courseware and a curriculum outline for their new apprenticeship program.

Using the TCRP E-7 rail vehicle maintenance technician qualification framework, they have sent 4 individuals through the Module 203 – Propulsion & Dynamic Braking written assessment and hands-on assessment developed

through the TCRP E-7 project. GCRTA used the written assessment as a pre- and post- assessment, having apprentices take one version of the test before training and a different version of the test after training. Once the individuals completed their written assessment, GCRTA held a hands-on assessment in the same module (Module 203) using the TCRP E-7 project template. Results from the pre- and post-training showed that adequate training produces a more skilled workforce.

Des Moines, IA



“Came into this program though a tunnel, with a small light at the end of the tunnel. Now we are at the edge of the tunnel and the light is spreading everywhere”

-Don Matz (DART)



In Iowa, the Transportation Learning Center (Center) partnered with Des Moines Area Rapid Transit (DART) and Amalgamated Transit Union Local 441 (ATU 441) to develop an apprenticeship program for bus maintenance technicians. DART is the largest public transportation system in Iowa, serving eighteen cities in and around Polk County. They have a bus fleet of 150 that operates on twenty-six routes. DART currently has no rail system.

ATU Local 441 is an affiliate of the Amalgamated Transit Union (ATU), a union that represents transit and school bus operators and mechanics. This local represents transit operators and mechanics within the Des Moines, IA public transportation system. It represents approximately fifty members who are employed within DART.

Des Moines Area Regional Transit Authority (DART) and ATU Local 441 had bus maintenance apprenticeship language in their contract language but there was no official apprenticeship structure in place; they needed to develop an official apprenticeship program. During the initial project conference DART and ATU Local 441 discussed working with the bus maintenance mechanics to develop Standard Operating Procedures (SOPs) for bus maintenance job tasks. Center staff agreed to assist them in this task by providing them with examples of SOPs and lending any technical expertise necessary

Bus Maintenance Apprenticeship

The Center worked with Des Moines Area Rapid Transit (DART) and ATU Local 441 to develop and pilot an apprenticeship program for their bus maintenance technicians. DART and ATU Local 441 developed a hiring/peer review committee for the apprenticeship that consists of two management and two union representatives with an alternate for each side. The apprenticeship lasts forty-eight months with 5200 classroom and hands-on training hours. Currently two individuals are entered into this apprenticeship program. The structure for the program is laid out as follows:

- Year 1 covers orientation, service, shop practice, PM inspection and lubrication (400 hours), welding and cutting (40 hours), cooling system (160 hours), wheel chair lift ramp (240 hours), exhaust system (120 hours), and body interior and exterior (320 hours). At the end of year one apprentices must successfully pass a Preventative Maintenance and Inspection test.
- Year 2 covers brakes (750 hours), suspension and chassis (240 hours), and axles and steering gears (240 hours). At the end of year two, apprentices must successfully pass either a brake test or a steering and suspension test.
- Year 3 covers electrical systems (12 volt and 24 volt) (750 hours) and heating and air conditioning (750 hours). At the end of year 3, apprentices must successfully pass either a electrical/electronic systems test or an HVAC test.
- Year 4 covers engine systems (750 hours) and Drive System Transmission (750 hours). At the end of year four apprentices must pass either a diesel engines test or a drive train test.

Once the apprentices have passed the applicable tests within the apprenticeship structure, they will have completed the program and will be recognized as journeyman technicians. Once they are journeyman technicians, they are eligible to complete additional tests to become a master technician, if they so desire. Currently two mechanics are

participating in the bus maintenance apprenticeship at DART. At the time of this report, a new bus technician was recently hired who will go through the apprenticeship program after he completes his 90 day probationary period.

Skills Gap Analysis

The skills gap analysis survey compares worker current skills and knowledge with the skills and knowledge required of top-flight experts in their occupation. Workers rate their mastery of their job and the various skills they must have to perform their job effectively and efficiently. The Center then analyzes the workers' responses and compares each worker's current capabilities to the knowledge, skills and abilities that someone in that position must have to perform at the highest level of expertise using today's advanced vehicles. The tasks and responsibilities in the analysis are based on the new National Training Standards developed by transit experts from labor and management working with the Center.

"Have to continue to move this program forward"
- Ronald Dahlberg
(ATU Local 441)

As part of an effort to help DART draft their training plan, the labor and management partnership decided to conduct a skills gap survey for their bus maintenance technicians using the National Bus Maintenance standards developed by transit experts from labor and management working with the Center and APTA. DART and ATU Local 441 felt the skills gap survey was necessary to provide them with a mechanism to compare employee knowledge, skills and abilities to the bus maintenance skill standards.

This skills gap survey, after analysis, was key in helping DART and ATU Local 441 to determine what training areas within their program needed the most attention, based on the learning objectives that showed the least knowledge from employees. Des Moines administered eight different bus maintenance skill gap analyses to seventeen workers. The skill gap analyses were in:

- Preventative Maintenance and Instruction
- Electrical/Electronics
- Electronics Diesel Diagnosis
- Transmission and Drive Train
- Steering and Suspension
- Air Brake System
- HVAC
- Fan Drive Operations, Maintenance, and Troubleshooting

Once skill gap analyses were received for all eight areas from the Center, Des Moines and ATU Local 441 formed a workgroup to review the skills gap report and determine the areas where workers needed more training. Once the training gaps were identified, Des Moines and ATU Local 441 worked together with the Center to determine effective and cost-effective ways to get technicians training in the areas identified.

Standard Operating Procedures

Standard Operating Procedures (SOPs) help determine the correct way for a technician to complete a job. Establishing SOPs helps with training, because it creates a standard process for job completion and how a job task should be done. Using a report written by Center staff John Schiavone, TCRP Report 109: A Guidebook for Developing and Sharing Transit Bus Maintenance Practices, (http://www.tcrponline.org/PDFDocuments/TCRP_RPT_109.pdf), Des Moines and ATU Local 441 worked together with the Center to develop standard operating procedures (SOP's) for their bus maintenance technicians. A time consuming task, to say the least, DART has only completed initial development of the SOPs, with more work to be accomplished within each SOP. However, SOPs have been started in 5 areas: Charging System, General Inspection, Orion Front Air Bellows/Bags, Orion Rear Brake Overhaul, and PM Inspection. Please refer to Table 3 for a complete list of SOPs in the development phase at DART. John

Schiavone, Center staff, has also written a report on DART's SOP development that can be accessed at http://www.transittraining.net/careers/ladder_details/standard-operating-procedures.

Table 3: DART SOPs

Charging System	Alternator Repair and Replace	Alternator
General Inspection	Brake Balance	Check Clevis Pin
	Brake Drum Check	Push Rod Stroke Check
	Check Brake Lining Wear	Slack Adjuster
	Brake Noise	Camshaft and Bushings
		Running Clearance
PM Inspection	Air Tanks and Drier	Public Announcement and AVL
	Batteries and Charging System	Rear Axle – Suspension
	Climate Control System	Seats, Grabrails, Flooring, Interior Panels, Drivers Seat
	Emergency Exits	Spring Brake Chamber
	Frame	Steering System Components
	Front Axle	Tires
	Fuel tank and fuel lines	Wheelchair Ramps or Lift, Flipseats, Restraints, & Tie Downs, Kneel & Door Operation
	Glass	Windshield Wipers
	Horn	Differential
	Lights	Emergency Equipment
	Mirrors	Engine Compartment
	Mud Flaps	Road Test
		Under Chassis
Orion Front Air Bellows/Bags	Check Bellows	Removal and Installation
Orion Rear Brake Overhaul	Orion Only	

Project Partner Highlights: Impact of the Project, What They Have Learned and Future Directions

For the final segment of the final CPCL project conference—and after the day-long Roundtable Conference discussions among project partners and outside participants—Center staff asked participants from our locations to reflect upon what they had learned and accomplished throughout the eighteen Career Pathways/Career Ladders project. Overall, project participants were proud of the work that had been accomplished during this project and looked forward to continuing the efforts that had been started during this eighteen month project. The following reflects the major themes and points made during that final discussion.

Learning from and Impact of Program Overall:	
Learned how much work it takes to put a good pathways program together, how important it is, how it helps the economy, the union, the transit authority and how programs like this could have a national impact.	Tremendous benefit to sharing materials across locations; gave out materials to other locations and took materials from other locations and applied to our own setting.
Developed a sense of how important it is to let people know more about these programs and how they can benefit.	Identified possibilities for connecting with WIBS, state, regional and national agencies and organizations that can help us do this work, including identifying potential sources of funding on different levels for parts of this work.
Gratified to see company and union working together and how that collaboration helps with all sorts of issues beyond Pathways and Ladders. Learned what we could accomplish together.	Opened our eyes to what is possible and what is necessary to establish programs, e.g., changing certain hiring rules to open the door for an internship.
Benefitted tremendously from understanding what has been done in other locations.	Benefitted from outside staff support provided by the grant; allowed time and effort to be cleared to focus on these projects.
Developed an understanding about how this work can be done, and that there can be a "light at the end of the tunnel" for moving our projects	Appreciated the opportunity to be able to get out of day-to-day details and be able to see the bigger picture.
Saw the powerful impact of mentors.	Saw importance of working in partnership.

Working with Young People	
Importance of involving parents.	Programs communicated the information to young people that transit is "here to stay," that it provides stability, along with good jobs and benefits.
Wonderful to see the impact on the young people, underscores importance of getting the word out to more young people and schools.	Value of instructors reaching out to students and parents—for instance through CTE school competitions and related activities.

Need to reach back into middle schools, think about an approach in the future of “each one reach one,” where graduates go back to talk to high schools kids and high school kids go back to talk to middle school kids.	Clear that where there was an internship, young people wanted the program to last longer, loved the work, building things and connecting with adults who could focus on them in the workplace and in their lives. Many come out of families where parents are so busy just try to get the bills paid that they don’t have time for the type of support and mentoring offered by the program.
Outreach and engagement programs helped students to get a sense of all the jobs associated with transit, how many jobs are involved when a bus goes down the street and what students need to do in their own school work and lives to be eligible for these jobs.	

Ideas Moving Forward	
Create time for this work.	Focus on veterans and women.
Keep working on developing transitions from internship to apprenticeship	Engage in more outreach to high school counselors.
Extend programs to veterans, welfare-to-work adults within community.	Think about how to more effectively use social media with young people.
Work on continuing communications to keep up the connections established through the Center’s Pathways and Ladders TTN site; examine additional ways to keep in touch, including discussion forums.	Explore possibilities of college credit assessment for afterschool curriculum and possible sources of funding for this assessment through follow-up with National College Credit Recommendation Service.
Continue work on redesigning apprenticeships, strengthening apprenticeship standards and establishing Registered Apprenticeships.	Further explore regional, state and federal organization and agency connections to see what funding and other resources available to continue and expand this work.
Build on what we have learned, including the possibility of connecting with WIBs and establishing externships with high school CTE teachers.	

A central overarching theme that came out of discussions with outside groups in the full-day Roundtable Conference that was echoed in the smaller debrief and project work reflections related to the concept of “legacy.” These frontline workers—as labor, management, mentors and trainers—felt deeply that their work on this project went to the very core of their legacy, which was to share their deep experience, expertise and knowledge with those coming behind them; that is, those already working in their organizations and the young people and others in the community who could have the opportunity to do the work that they have done throughout their careers. They wanted to continue this important work that would leave a legacy that will create pathways of opportunity, good training, committed mentoring and strong apprenticeship programs that provide for others the great careers that they have had throughout their work-lives. They all came out of this project more committed than ever to reaching back to others and “passing it on.”

Conclusion

Throughout the course of this eighteen-month Career Pathways/Career Ladders Innovative Workforce Development project, the five partner agencies built significant new initiatives and strengthened and expanded existing programs. Their work, coordinated through and supported by Transportation Learning Center expertise and support, established projects and approaches that are now embedded in the work of the partner agencies, unions and education institutions. Throughout the project, partner agencies also learned from each other through webinars, conferences and ongoing communications facilitated by the Center.

The Center used its final conference to create dialogue about models created, lessons learned and best practices both with and beyond the five partner locations. The final conference's day-long interactive dialogue among additional transit agencies and unions as well as government agencies and non-profit organizations migrated valuable information among a much wider circle of key players involved in Pathways and Ladders work in transportation. That dialogue has started to build a foundation for new Pathways and Ladders work in new locations, while providing the original project partners with an expanded network of organizations that can provide ongoing information and support, in part facilitated through the Center's development of a Career Pathways and Career Ladders site in its online Transit Training Network.

In addition to Center-sponsored conferences and other communication mechanisms, throughout the course of the project period the Center has taken advantage of opportunities to communicate new models and lessons learned to wider audiences. Various Center staff have presented project-related work at a number of national conferences on transit, transportation and Career Pathways and Career Ladders, and the Center has produced one major national report on Pathways partnerships and worked collaboratively on another major national report in this area. Through these activities, the results of the FTA project work have reached an audience far beyond the original partners.

The impact of this project's work will reverberate and have an impact well-beyond the partners and well-beyond the end of the formal project time frame. All project partners have emphasized their commitment to continuing and expanding the work they have been able to engage in through the support of the grant. And through the connections either newly-established or strengthened through project-supported activities, other transit agencies and unions, along with non-profit organizations and government agencies, have engaged with the Center in examining a variety of programs, methods and strategies that can move Career Pathways and Career Ladders work forward. The Center is committed to using the experience and knowledge gained through the Innovative Workforce Development project to play a central role in supporting collaborative partnerships within the transit industry and with allied organizations to initiate, strengthen and expand significant work in Career Pathways and Career Ladders. Significant progress has been made over the course of this project, but much more work needs to be done, and the Center will continue to carry on its mission of moving this important work forward.