FTA RESEARCH

Advancing Frontline Workforce Development Meeting: Synthesis

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Advancing Frontline Workforce Development Meeting: Synthesis

Metric Conversion Table

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
LENGTH				
in	inches	25.4	millimeters	mm
ft	feet	0.305	meters	m
yd	yards	0.914	meters	m
mi	miles	1.61	kilometers	km
VOLUME				
fl oz	fluid ounces	29.57	milliliters	mL
gal	gallons	3.785	liter	L
ft³	cubic feet	0.028	cubic meters	m³
yd³	cubic yards	0.765	cubic meters	m³
NOTE: volumes greater than 1000 L shall be shown in m³				
MASS				
oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
TEMPERATURE (exact degrees)				
°F	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C

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13. ABSTRACT

This report synthesizes findings from a two-day gathering of more than two dozen transit industry labor and management representatives who engaged in in-depth discussions on frontline workforce training needs across the U.S. The purpose of the meeting was to identify immediate, short-term, and long-term training needs for the frontline public transportation workforce in the U.S. and ways to connect apprenticeship and formal training programs to support these needs. Although there have been many initiatives that have advanced frontline workforce training, there continue to be unmet needs, changing demands, and obstacles in this area. In preparation for the meeting, the Transportation Learning Center and NTI identified representatives from labor and management who have a strong interest in developing frontline operators and maintainers and initiated invitations to them.

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EXECUTIVE SUMMARY

This synthesis offers a detailed summary of a two-day gathering of more than two dozen transit industry labor and management representatives who engaged in in-depth discussions on frontline workforce training needs across the country.

The structure of this synthesis parallels the sequence of events during the two-day event. Section 1 provides background and describes a major national transit industry dilemma – a significant skills shortage among its frontline workforce. It also introduces the three key priority areas of the frontline workforce development life cycle—Recruitment, Development, Retention.

Section 2 recaps the spirited discussion on Priority Area 1: Recruit. Discussion topics in this section include occupations with highest future demand, effect of automation and new technology on labor demand and supply, successful outreach efforts and strategies, and partnerships to recruit future transit workers.

Section 3 outlines the discussion on Priority Area 2: Develop, including training methods/successful training platforms, training and apprenticeship programs, industry skills gaps, and other employee development initiatives.

Section 4 is an overview of the discussion of Priority Area 3: Retain. Critical topics covered in this section include employee recognition programs, enhanced communication to employees, development of promotion pathways, and identifying positions with high turnover and retirements.

Section 5 includes recommended actions for each Priority Area.

The meeting agenda, participant roster, roundtable discussion questions, and PowerPoint presentations are included in appendices.

Background

The public transportation industry faces a significant skills shortage among its frontline workforce, driven by changing demographics, retirement of experienced workers, pervasive technological advances, increased demand for service, and competition from other industries.

Figure 1-1

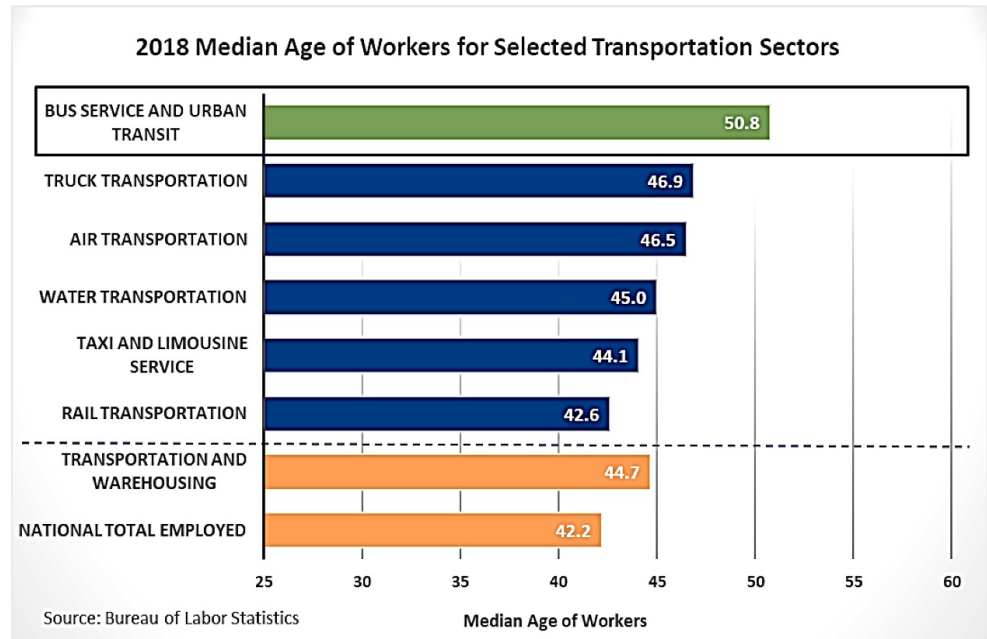*Transit frontline hiring and training needs*

Transit has one of the oldest workforces in the transportation industry and the overall U.S. economy. According to the Bureau of Labor Statistics, in 2018, 41% of workers in bus services and urban transit were age 55 or older. The 2018 median age of the bus service and urban transit workforce was 50.8, compared to 44.7 of the transportation and warehousing industry and 42.2 of the national working population (Figure 1-2). Exits from the industry caused by retirement and turnover produce a need to hire and train a large number of transit workers in the next 10 years. Of the current workforce of 400,000, more than 90% are frontline operations, maintenance, and construction workers.

In cities such as Seattle, Los Angeles, and Dallas, transit services are expanding, with new bus routes or rail lines being added. This produces pressure on hiring needs. Some agencies are experimenting with new service models, such as first/last-mile services or microtransit. New technologies, including autonomous shuttles and buses, automatic fare systems, and Positive Train Control on commuter rail, have implications on future hiring and training needs. Some job tasks will become obsolete, others will be modified and redefined, and new roles will be created.

Transit faces competition from other industries for talent but continues to struggle with a poor image. Many think that being a transit mechanic means turning wrenches, when, in reality, troubleshooting using a laptop connected

to a vehicle and deciphering fault codes has become an essential part of the job, such that mechanics must continue to acquire new skills associated with the automation or computerization of other tasks. These factors present both serious challenges and exciting opportunities for workforce development.

Figure 1-2

2018 median age of workers for selected transportation sectors

2018 Median Age of Workers for Selected Transportation Sectors

Sector	Median Age
BUS SERVICE AND URBAN TRANSIT	50.8
TRUCK TRANSPORTATION	46.9
AIR TRANSPORTATION	46.5
WATER TRANSPORTATION	45.0
TAXI AND LIMOUSINE SERVICE	44.1
RAIL TRANSPORTATION	42.6
TRANSPORTATION AND WAREHOUSING	44.7
NATIONAL TOTAL EMPLOYED	42.2

Source: Bureau of Labor Statistics

Median Age of Workers

Meeting Purpose and Structure

On December 11 and 12, 2018, the National Transit Institute (NTI) and the Transportation Learning Center (TLC) convened a two-day gathering of more than two dozen labor and management representatives from the transit industry to discuss frontline workforce training needs. The Federal Transit Administration (FTA) encouraged this effort as part of its ongoing mission to address workforce development as the industry struggles to find qualified transit vehicle operators and technicians. The Amalgamated Transit Union (ATU) Tommy Douglas Conference Center in Silver Spring, Maryland, served as the site for the gathering.

The purpose of the meeting was to identify immediate, short-term, and long-term training needs for the frontline public transportation workforce in the U.S. and ways to connect apprenticeship and formal training programs to support these needs. Although many initiatives have advanced frontline workforce training, there continue to be unmet needs, changing demands, and obstacles in this area. In preparation for the meeting, the TLC and NTI identified representatives from labor and management who have a strong interest in developing frontline operators and maintainers and initiated invitations to them.

The conference opened with presentations that provided basic background. Billy Terry, Director of NTI, welcomed participants, gave an overview of the

agenda, and introduced Robert Molofsky, General Counsel of the ATU, and Mary Leary, Deputy Associate Administrator of the FTA Office of Research. TLC Deputy Director Xinge Wang and Executive Director Jack Clark offered views on the extent of the workforce skills crisis and informed the audience of some innovative programs to address frontline training needs that included a variety of training consortia and apprenticeship programs. John Ladd of the U.S. Department of Labor (DOL) Office of Apprenticeship provided an overview of the growth in registered apprenticeships in recent years.

Robin Utz of the Office of Career, Technical, and Adult Education at the U.S. Department of Education (DOE) provided a comprehensive look at how Federal career and technical education is changing and can offer resources for training. Janet Weisenford of ICF and Alex Bond of the Eno Center for Transportation shared insights from extensive research on best practices in transit training. Ed Watt, Director of Special Projects for ATU, gave his perspective on how training relates to safety and employee involvement.

Thereafter, four roundtable discussion sessions were facilitated and recorded by staff from NTI and TLC.

Appendix A provides a conference agenda, Appendix B provides a participant roster, Appendix C provides a list of roundtable discussion questions, and Appendix D provides links to PowerPoint presentations from speakers.

Frontline Workforce Development Priority Areas

During the two-day meeting, participants held discussions in three key aspects of the workforce development life cycle—Recruit, Develop, and Retain. Many ideas were shared on the strategies, best practices, and recommended action items to take at the national, state, and regional levels to address transit workforce challenges. The following sections provide an overview of these key themes and the associated findings identified by participants during the two-day meeting; they do not necessarily represent a consensus among participants.

Figure 1-3

Three aspects of workforce development
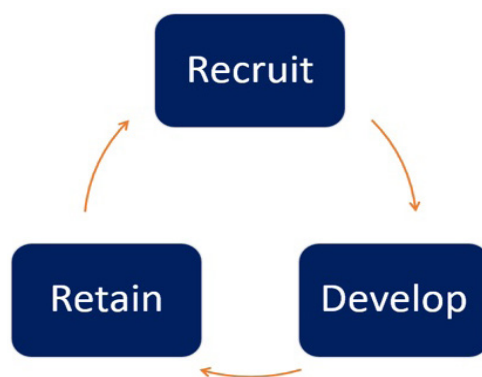
Priority Area 1: Recruit

Given the large and growing number of retiring frontline workers and the shortage of willing and able replacements, recruiting new workers to fill the void becomes essential to the viability of every transit agency.

Occupations with Highest Future Demand

Transit agencies are struggling to fill virtually all positions, with vehicle operators and technicians at the top of the list. The struggle stems, in part, from other industries more actively seeking to draw from the same limited labor pool. Factors making vehicle operator recruitment difficult include onerous requirements, such as the need for candidates with a five-year, clean driving record, thus making only part-time work available at first; lack of regulations for time off between runs; and low starting pay.

For some agencies, the biggest challenge is finding paratransit operators, and agencies with heavy rail systems find it especially difficult to fill elevator/ escalator technician positions. Bus and rail technicians are also difficult to recruit, especially those with the skills needed to maintain electric-powered vehicles and other advanced technologies. Other obstacles include the need for employees to have a Commercial Driver's License (CDL), and, in some states, CDL operators need to be older than the minimum age of 18, causing potential candidates to bypass transit and begin their careers in elsewhere. Other obstacles include more effective recruitment programs in place in competing transportation sectors and night/weekend work shifts, especially for those with young families.

Virtually every agency is understaffed with technicians, with the outlook getting worse as baby-boomer technicians retire. Some agencies compensate by using outside contractors, which, over time, diminishes the ability to perform maintenance work in-house as agencies become increasingly dependent on outside vendors.

Other transit occupations with high future demand for personnel include:

- Frontline supervisors
- Facilities personnel & building engineers
- Communications technicians (GPS, radios, etc.)
- Service-line personnel (fuel lane, cleaners)
- Fare collection inspectors

- Quality control personnel
- Safety professionals
- Customer service providers

Assessing Recruitment Needs

When determining recruitment priorities, personnel shortages in certain job areas will become apparent to the agency. It was noted that APTA's website has a "Hardest to Fill" job listing section that agencies can use as a starting point in combination with agency data to prioritize recruitment needs.

Effect of Automation and New Technology on Labor Demand and Supply

Regarding maintenance, new technology such as battery-electric propulsion systems and advanced electronics require personnel to acquire new skill sets and knowledge. One agency revealed that the purchase of six battery-electric buses completely changed the culture of its technicians, requiring them to obtain specialized training. Vehicle operators will need to adapt to new skills brought on by autonomous vehicles (AVs), which may serve as a deterrent to recruitment because working as a bus attendant may not be viewed as rewarding or appealing. Technicians will also require new skill sets to maintain and repair AVs. The proliferation of cameras, another relatively new technology with growing implementation, may deter recruitment because of "big brother" concerns. Some advanced technologies may eliminate or reduce jobs within transit; for example, regenerative braking in hybrid and electric buses reduces the need for brake work.

Successful Outreach Efforts and Strategies

Several successful outreach efforts and strategies to recruit frontline workers were discussed. To attract new workers, communicating the benefits and advantages of a transit career is seen as central to the recruitment process in the areas of:

- Heath, retirement, and vacation benefits
- Competitive salaries
- Potential for salary growth through advancement in management and labor occupations
- Benefits offered through union membership
- Job stability

- Diverse nature of transit occupations to satisfy a wide variety of career paths
- Positive public service aspect of transit, in that transit provides an essential public service, reduces traffic congestion, and contributes to cleaner air
- Opportunity to work with advanced, cutting-edge technology

Recruitment communication efforts should also include informing recruits up-front about the less-appealing elements of transit occupations such as night and weekend work shifts. These work hours, however, can be appealing to ex-military personnel already accustomed to non-traditional work schedules. Additionally, many ex-military personnel have advanced electronics experience, which makes them well-suited to advanced transit equipment and vehicles. Communication should also emphasize comprehensive training programs such as tuition-free apprenticeships offered by many transit agencies.

Other recruitment tips include the following:

- Communicate annual salary instead of hourly wage.
- Rebrand job titles to make them more appealing.
- Start recruiting to a younger audience.
- Align agency's recruiting efforts with DOE and DOL to make students aware of transit-related jobs.
- Align with schools as sources for pre-apprenticeship activities.
- Partner with mentorship organizations and attend youth summits to expose students to transit.
- Highlight advancement opportunities within transit.
- Highlight management and supervisory training opportunities.
- Stress the portable nature of a transit career (ability to relocate).

Outreach programs include hosting open houses at transit agencies and attending job fairs to expose potential candidates to transit. One agency invites high school students to visit and learn more about transit jobs, creating a pipeline to fill agency vacancies. Other agencies establish recruitment pipelines with career and technical education (CTE) programs, community colleges, vocational schools, military organizations, ex-offender groups, and immigration organizations. Others invite community organizations to visit the agency to become familiar with its many career opportunities.

Recruitment is also aided by more efficient hiring processes, such as allowing candidates to apply for jobs online. Some agencies include frontline employees and union representatives in the hiring process, having them participate in hiring and on evaluation committees. Other agencies broaden their eligibility requirements by considering prior experience, certifications, military experience, and other industry experience.

Initiatives and Programs to Equip Potential Candidates with Basic Skills

Pre-apprenticeship programs were cited as a popular way to introduce and engage potential candidates. It is essential that the new generation of workers takes ownership of what they do—engaging them to participate in developing safety rules and training programs and determining how those programs are delivered. During pre-apprenticeship training, it is essential that candidates are reassured that agencies value and need them. Some agencies cooperate with charter, vocational, and other specialty schools that offer transit career programs. In one case, a labor union developed a specific transit program at a local community college that promotes union leadership.

Partnerships to Recruit Future Transit Workers

Several agencies partner with educational institutions such as high schools, community colleges, vocational schools, veteran groups, adult education programs, and pre-apprenticeship organizations to provide internships for interested candidates. In turn, the schools provide transit agencies with a viable pool of workers who come to the agency with solid transit experience. Some agencies donate buses and other equipment to the schools to help bolster the transit portion of their technical training programs.

Another partnership effort involves collaborating with local workforce boards to make those who may have lost union jobs at nearby industries aware of job openings in transit. One agency partners with community-based organizations, assisting those convicted of crimes to expunge their records through transit employment.

Measures of Success

Popular measures of success shared by participants include an increase in the number of frontline workers that advance from apprenticeship to full employment, an increased number of candidates applying for jobs, an increased number of candidates that make it through the application process, and reduced employee turnover.

Priority Area 2: Develop

The demand for training to build frontline worker skills is especially great in transit, particularly when the majority of transit agencies have little or no training capacity. Most agencies are forced to rely on training provided by vehicle and equipment manufacturers, which tends to be minimal and directed to specific products, not towards enhancing core competencies.

Despite the dearth of training, vehicles and their onboard systems continue to become increasingly complex, with electronics permeating nearly everything on transit vehicles, including digitally-controlled vehicle location technologies, automatic annunciation and signaling, air conditioning, ultra-sophisticated emission controls for diesel engines, and potentially dangerous battery electric propulsion, all of which require different skills. The funds being wasted on faulty repairs and improper diagnostics due to lack of training is staggering. The clear but misdirected focus in transit is on acquiring the latest hardware, not on training frontline workers to properly operate and maintain sophisticated hardware.

Key Skills and Competencies Needed for High-Demand Frontline Occupations

Discussions in one group began with a common issue facing transit today: How does the industry provide training to frontline workers at a time when so many positions are vacant and every available worker is needed to meet daily service requirements? Unless this question is answered, the skills gap will continue to widen. "We don't focus enough on [frontline worker] skills and competencies," said a senior manager at one agency. "How do you focus on what people need, particularly if there hasn't been training [provided to them] in a while?" Another participant asked, "How can you send people to get trained and still manage to keep enough [technicians] on the shop floor to get buses out [for service]?"

One agency conducted a skills gap analysis of its technicians and was surprised to discover how many technicians did not feel qualified to do their jobs adequately. Another agency revealed that many technicians know how to do certain tasks but were not trained on the underlying theory, making it difficult to diagnose faults. Many technicians who have not received electrical and electronics training avoid those tasks, leaving them for others to perform. The result is a small number of specialists unable to keep pace with the growing work load.

Essential skills needed for technicians include electrical and electronic skills, troubleshooting skills, computer skills, and proficiency with accessing technical and repair data. A common dilemma in transit maintenance stems from the fact that many senior technicians who grew up without computers are reluctant to adapt to electronic technologies, whereas younger workers who are familiar with computers are not familiar with their application to transit vehicles and equipment. Both groups need training, but the source of that training is in scarce supply and not sufficiently organized.

The popularity of battery-electric buses is growing at a fast rate. Specific skills needed by technicians to service electric buses include high-voltage electrical and safety skills. Many agencies, aware that they cannot provide the needed training, have turned to long-term contracts with vehicle suppliers to perform essential repair tasks, which isolates agency technicians from gaining valuable hands-on experience. Several agencies reported that battery-electric vehicle manufacturers have developed excellent training programs and have a vested interest in ensuring that the new technology prospers through a skilled workforce. The common dilemma, however, prevails—how do you spare technicians for training when they are needed to keep the fleet operational because the maintenance department is understaffed?

Other skills and competencies needed by technicians include soft skills, basic communication skills, people skills, diversity training, and advanced technology skills for compressed natural gas (CNG), hybrid, and clean diesel, all of which have become extremely complex. Vehicle operators require training to develop problem-solving skills, conflict management skills, de-escalation training skills, and diversity training skills.

Participants noted that all frontline workers would benefit from middle manager-level training. After becoming proficient at their jobs as operators and technicians, many advance through the ranks to become supervisors but lack the requisite skills, and agencies often lack the resources to provide them with those skills.

Major Skills Gaps

Frontline worker skills gaps exist in several areas:

- Interpersonal skills
- Basic and technical writing skills
- Creating a shared vision for team building for frontline supervisors
- Leadership skills for frontline supervisors
- Employee development skills to advance workers
- Basic and advanced electrical and electronics skills, especially those related to battery-electric buses and charging infrastructure

- Innovation, which keeps workers stuck in traditional roles and mindsets
- Software programming skills

Keeping Training Materials and Procedures Current

When asked for ways to keep training materials current, the following recommendations were made:

- Maintain communication with original equipment manufacturers (OEMs).
- Adequately fund training so agencies have the resources needed to keep materials current.
- Initiate a culture shift in transit to focus more on training.
- Use knowledgeable frontline workers proficient with new technology as mentors to assist others.
- Make use of a training resource catalogs noted in Transit Cooperative Research Program (TCRP) Research Report 199: "Transit Technical Training, Volume 1: Guide to Applying Best Practices and Sharing Resources."

Effective Strategies and Initiatives to Fill Skills Gaps

Several agencies noted apprenticeship programs and related mentoring as an effective way to fill skills gaps, noting several transit-related apprenticeship programs being developed by the TLC and sponsored by the DOL. Among their many benefits, registered apprenticeships certify that an agency's training program meets industry standards, ensuring that workers have the appropriate skills as identified by their peers. One agency noted that its apprentices receive educational credits, and the State pays 90% of apprentice wages.

Training is essential for closing skills gaps for all frontline employees; all have a need for training, as even seasoned workers need to remain current with new equipment. Conducting periodic skills analyses where frontline workers are surveyed regarding competency levels is an effective way to identify and target training. It was stressed that all workers need to participate in training to make certain they have the needed skills. Assessments such as written tests and/or on-the-job validations ensure that skills have been learned.

Successful Training Platforms

Several successful operator training platforms were noted:

- Use and combine all training platforms, including e-learning and app-based learning.

- E-learning can be effective for training operators on safety, new equipment, conflict resolution, and standard procedures and for familiarizing them with mechanical aspects of a bus for better problem understanding and reporting problems back to maintenance.
- Real-life role playing with operators is an effective way to assess their reactions to hostile situations, especially when real-time coaching is provided in the process.
- Trainers should ride along with operators to provide real-time feedback.
- Simulator training can be effective, placing operators in real-life situations.

The need to engage technicians in the learning process is essential, especially for younger workers who grew up with computers and video animation. Sitting technicians in classrooms for day-long lectures can be ineffective; student technicians need to be engaged through animated presentations, lab work, on-the-job learning, mock-ups such as air brake boards, and other activities that have them actively participating in the learning process. Mentoring programs in which student technicians learn from seasoned veterans through actual job tasks is a time-tested method for passing skills from one generation to the next.

Several web-based training platforms are available in which students are guided through simulated job tasks. The TLC is developing a series of distanced learning courses for bus technicians that will be available online; the courses contain pre-recorded lecture, guidance for administering hands-on exercises, and assessments for validating learning. Course content has been developed, is ready for delivery, and is robust enough to be delivered by subject matter experts (SMEs), those not formally trained as instructors but who have the necessary technical experience. Preparatory instructions are also available to help instructors and SMEs navigate their way through the distance learning platform and provide useful training delivery tips and suggestions.

Making Strategies, Initiatives, and Partnerships Effective

Approaches for making strategies, initiatives, and partnerships effective include calibrating and shifting work schedules so employees can take advantage of training opportunities, which was recognized as especially challenging for smaller (if not most) agencies. Some mentioned using labs for hands-on training, which may be difficult for agencies lacking such resources and equipment. Other suggestions include:

- Establish a mix of e-learning and on-job-training.
- Provide training that teaches communication and soft skills.
- Provide diversity training that promotes understanding the differences of generations, gender, and races.

- Use apprenticeships to advance core skills.
- Offer specialized training that promotes management and supervisory skills.
- Keep training materials current.
- Be transparent as a way to make strategies effective.
- Provide real-time training and feedback through on-job-training.
- Provide training that includes real-life simulations.

It was broadly recognized that a culture change is needed in transit, being more proactive and providing more opportunities to send people to training without having to worry about making the required number of vehicles available for service each day.

Typical Career Ladders for Frontline Workers

Agencies recognize that they do not give enough thought to establishing career ladders for their employees. Registered apprenticeships provide the training needed for frontline workers to advance, but few agencies have adopted them. One participant stated that his agency did not want to be regulated by apprenticeships, noting a lack of understanding to the many career advancement benefits offered through apprenticeships. It was also mentioned that internal candidates should not take a pay cut to become an apprentice.

Related to career ladders, one participant suggested that agencies need to emphasize transit careers, not just jobs. Agencies should outline career pathways for various positions and make employees aware of those opportunities. Some agencies have prepared career path charts that show progression through agency ranks with necessary requirements to pass from one position to another. One agency described the requirements needed for a service line worker to advance to mechanic helper and then to technician as an example. Another agency partnered with a local community college to prepare frontline workers for advancement; the agency pays employees for that education. Typical career paths for operators include operator to frontline supervisor to superintendent, operator to instructor to street supervisor to assistant manager to control center staff, and operator to technician or to management position. Typical career paths for maintenance personnel include cleaner/fueler to apprentice to technician to lead technician to supervisor and technician to instructor to parts or warranty specialist to management position.

Several participants mentioned the difficulties inherent with moving from a labor position into management because seniority and other benefits may be lost, making many union employees reluctant to make a move.

Effective Strategies and Initiatives for Promotional Opportunities

One agency stressed the importance of developing a skills matrix on a joint labor-management basis that identifies needed skills for each occupation and suggested that "skills gap" is a negative term. The term "skills enhancement" is more positive, based on the assumption that a worker is already skilled but needs enhancement through targeted training. In addition, it was stressed that disciplinary action should not result from any skills survey. High-performance work organizations are those that identify skill deficiencies and target training to improve employee skills, giving them opportunities for advancement.

One agency produces individual development plans with workers to help them determine where in organization they would like to go, with a supervisor as a career coach. Another agency mentioned a city-wide program for all frontline workers (transit, public works, etc.) that provides them with the guidance and training needed to advance to other jobs throughout the city. Anyone can apply after permission from their supervisor. Another example encourages workers to explore other jobs in the agency before making a career move, allowing them to work in a different position for 30 days or return to their old job without penalty.

At one agency, workers can attend a six-month leadership academy to prepare them for specific jobs. Before doing so, however, an actual job opening must be anticipated at end of the training program. Another agency offers a separate apprenticeship program in which workers in one position can learn more about other agency positions to broaden their knowledge of the agency.

Cultivating Supervisory and Managerial Skills

Participants acknowledged that the building of supervisory and management skills is a weak area for transit; not enough is being done to prepare workers for these important positions. Promotions into these positions typically are based on a candidate's performance in his/her current job. The needed skill set for management is much different. Without formal training, new hires promoted into supervisory positions are left on their own to cultivate needed skills.

As noted, union workers often are reluctant to leave their union for supervisory jobs, thereby hampering the ability to fill managerial positions with qualified personnel. A good policy to encourage movement into these jobs is one in which union workers are given a 30- or 90-day trial period and can return to old job without penalty.

Some agencies use outside sources such as community colleges to provide communications and soft skills training as a way to enhance managerial skills. It was noted that lack of these skills should not necessarily disqualify someone for promotion because they may have other desirable skills; supervisory and managerial skills can then be learned on the job. Women with children are often unfairly disqualified from supervisory positions because access to these positions is many times based on attendance records. When it comes to filling supervisory jobs, having actual job skills and experience is seen as more important than having a college degree.

As one agency representative mentioned, leadership skills for frontline workers need to be developed early in the job process. One agency encourages women and other underrepresented groups to move into leadership positions, and another provides mandatory training to cultivate supervisory skills. Part of that training includes shadowing supervisory positions.

Measuring Success

The ability to measure training success depends on an agency's data collection and data analysis ability. Low worker turnover is seen as a measure of success because training typically leads to job satisfaction. One agency saw a 90% improvement in self-assessment surveys of employee skills following training. Other training success indicators include:

- Reduction in the number of repeat repairs, an indication that training caused technicians to perform repairs correctly the first time.
- Reduction in parts replacement, an indication that training led to technicians correctly diagnosing the failure the first time instead of simply replacing several good parts until they stumble upon the actual defective part.
- Improvement in mean time between breakdown, implying vehicles remain in service longer periods of time between in-service failures.
- Improvement in mean time for repairs, implying that repairs are done much quicker because technicians are properly trained.
- Ability to meet strategic management goals.
- Improved communication between operations, maintenance, and procurement.
- Faster progression to higher job positions as a result of training.

Priority Area 3: Retain

Once efforts are taken to recruit workers and provide them with needed training, programs to retain those workers within the organization are absolutely essential. Without such programs, the investment made in these individuals is greatly minimized.

Critical Frontline Occupations with Highest Turnover and Retirement

Vehicle operators in all transit modes—rail, bus and paratransit—experience the highest turnover due in large part to voluntary terminations. Some use transit to receive training and then leave for jobs in other transportation sectors. Although many technicians are reaching retirement age, they tend to stay with the agency until retirement. It was noted that operators conduct their work in a public environment, which leads to stress and greater turnover, whereas maintenance personnel are isolated from the public. Supervisory and lead positions were mentioned as other frontline occupations with significant turnover; many frontline workers are lost during the probationary period, which was noted as a reason for the large turnover.

A challenge shared by some participants is how to incentivize lower-seniority workers who typically begin their transit careers working night and weekend shifts. Providing a higher wage scale to those working these shifts is a possible solution to get higher-seniority workers to choose these schedules, thereby making more desirable shifts available to newer employees.

One participant stressed that because transit is a 24/7 industry, employees need to accept non-traditional work schedules as part of "paying their dues." Eventually they can move up and choose more desirable shifts. However, another participant cautioned that the new generation of workers is not inclined to wait around in exchange for a long-term career.

Effective Activities to Engage, Recognize, and Incentivize Frontline Workers

Discussions centered on the importance of taking action to retain employees and not lose the investment agencies have made in training them. One suggestion included periodically validating competencies as a way of identifying skill enhancement areas and then targeting training to refresh their knowledge and skills. Training keeps workers engaged and made to feel vital to the

organization. One agency uses union-developed apprenticeship training as a method to retain employees. Apprenticeships are a way to make sure workers know that unions deal with more than grievances, including skills development. Mentorship programs can help with job satisfaction, as senior workers take pride in their ability to pass down information and traditions.

Another agency allows technicians an opportunity to move to other depots as a way of keeping them interested and challenged. For operators, one agency has organized an assault committee to give frontline operators a voice in combating assaults. As a result of their input, partitions were incorporated into new bus designs, and older buses were retrofitted with the partitions to help protect operators.

Other agencies also mentioned involving frontline worker input in the bus procurement process, participating in the development of technical specifications based on their experiences operating and maintaining buses.

Others mentioned that health and safety training helps reduce operator stress. Determining where operators go for employment once they leave transit and why is important to understanding departures and initiating transit programs to encourage retention.

At one agency, the union paid to have two gyms installed, hired a physical trainer, and offers healthy food choices to retain operators. It was noted that random drug testing in an environment of marijuana legalization causes many candidates to avoid transit careers. One agency with many generations of workers forced them to understand generational difference and gaps inherent in the public education system that do not teach aspects important in the workplace. As a result of that understanding, the agency began to inform workers of the importance of health benefits and a pension and the role unions play in the workplace. Doing so helped that agency to retain workers.

Other suggestions to retain workers include the following:

- Make workers aware of promotional opportunities.
- Create a positive work culture.
- Recognize and assist workers to obtain basic needs (e.g., housing) and give them resources needed to meet those basic needs.
- Use bus wraps to recognize outstanding employees (visibility to the pubic).
- Provide free meals at the agency to recognize all workers.
- Participate in local and national roadeo competitions.
- Provide maternity/paternity leave.
- Offer safety awards at an agency-sponsored banquet.

- Provide an extra floating holiday for those with exceptional attendance or other noteworthy job characteristics.
- Initiate employee appreciation picnics.
- Let senior workers know that agencies value their skills and knowledge.

Effective Mechanisms to Share and Encourage Replication of Retention Practices

Multiple channels of communication are seen as the most effective way to share retention practices, such as providing information at union meetings, having those who attend meetings and workshops report back to others via roundtable discussions, and posting on social media. One participant warned about not placing too much reliance communication technology, favoring more face-to-face interaction instead. Proactively communicate frontline worker programs to other agency representatives at major industry meetings, and make sure that the few who attend these meetings report findings to other agency personnel upon their return. It is important to send different employees to different industry events to obtain different perspectives.

One agency conducts monthly labor–management meetings to discuss safety and training issues where the General Manager attends all meetings.

Recommended Actions

The following recommendations were provided by meeting participants in the three priority areas.

Attracting and Recruiting Frontline Workforce

Based on discussions, it was clear that transit agencies need assistance with their efforts to recruit frontline workers to fill vacancies. Recommendations for that assistance include developing a recruitment kit to help agencies with their efforts to more effectively promote transit as a viable career and recruit frontline workers. The kit would include successful outreach strategies and partnering programs noted herein as best practices to advance the many benefits of a transit career to those looking to enter the job market or make career changes.

Of significant benefit to agencies would be a generic recruitment video that agencies could post on their websites and distribute to locations frequented by career seekers. The video would introduce them to transit and professionally present the positive role transit plays in society, the broad diversity of transit occupations, the advanced nature of transit technology, various career paths within transit, and the many advantages offered by transit employment. The video would do more to attract the attention of those looking for career direction than any single transit agency could do on its own, especially those with limited resources. Each agency could supplement the video with other materials and presentations to highlight specific features and benefits offered by their particular location.

Frontline Workforce Development

Discussions underscored the general problem of not paying enough attention to frontline worker skills and competencies. Instead of building needed skills through training, agencies and industry officials place greater emphasis on procuring advanced equipment such as battery-electric buses. There is a general failure within transit to realize that without proper skills, advanced technology equipment will not operate in the manner intended or may not function at all.

Justifiably preoccupied with having enough vehicles ready to meet peak service demands, too many agencies lack reserve resources to devote to training. Exacerbating the training dilemma is that in an environment in which most agencies are short-staffed, the ability to take frontline workers away from

their jobs and send them for training becomes a necessity that cannot be accommodated. As training continues to fall behind and skills deteriorate, agencies face a real possibility that they will not have the required number of vehicles available to meet daily service requirements.

Due to impending retirements and frequent turnover, there is a need to hire and train 500,000 transit workers in the next 10 years, and more than 90% will be frontline workers. Given that transit spends less than 0.88% of payroll on training compared to 2% for an average U.S. company, the task of providing needed training is overwhelming and will not be met unless immediate action is taken.

Despite budgetary constraints, it is recommended that industry leaders give frontline worker training the attention it needs and collectively work to fill the training deficit. In solving this dilemma, two challenges must be addressed— how to provide training at a time when most agencies are short-staffed and cannot spare workers for the training and where most agencies have little to no training capacity.

Solving the first challenge will entail filling shortages through more active recruiting techniques and accelerating apprenticeship efforts to achieve an appropriate number of apprentices and technicians. The ratio of technicians to apprentices is one in which the number of graduating apprentices in a given year is equal to the number of retiring technicians.

The second challenge of providing training at agencies that have little or no training capacity can be solved in several ways. One recommendation is to provide them with training resources such as distanced training, ready-made internet-based courses that agencies can deliver with little effort. Other recommendations include:

- Make use of retired instructors as traveling educators that can deliver training to agencies as needed.
- Expand the role of OEM training to provide foundational instruction on core competencies.
- Work with community colleges and vocational schools, assisting them to establish transit specific training programs.
- Fund larger agencies with existing training resources to expand those resources to serve as regional training centers.

As often mentioned by participants, a culture change is needed with regard to developing frontline worker skills.

Frontline Employee Retention

Agencies would benefit from a comprehensive "best practices" manual that documents successful approaches used by transit agencies nationally to retain its frontline workforce. As with recruitment and development of training, these activities are challenging for the vast majority of agencies to become proficient on their own. Because their primary focus is to provide safe and reliable transportation services at a time of budgetary constraints, many agencies simply do not have the necessary resources to devote to workforce issues, especially when it comes to more effectively retaining its current workers. Any assistance that comes to them in the form of collective practices known to provide beneficial results would help maximize their efforts to maintain workers they successfully recruited and trained.

Meeting Agenda

**NATIONAL TRANSIT INSTITUTE AND
TRANSPORTATION LEARNING CENTER**

Advancing Transit Frontline Workforce Development Meeting

December 11–12, 2018

Tommy Douglas Conference Center II, Silver Spring, MD

December 11, 2018

8:00–8:30 AM	Registration
8:30–9:00 AM	Welcome – Robert Molofsky, ATU International Opening Remarks – Billy Terry, National Transit Institute
9:00–9:15 AM	Federal Transit Administration Introduction – Mary Leary, FTA
9:15–9:45 AM	Background Presentation and Current State of Frontline Training • Xinge Wang, Transportation Learning Center • Jack Clark, Transportation Learning Center • Mary Leary, Federal Transit Administration
9:45–10:00 AM	Break
10:00 AM–12:00 PM	Current Schools of Thought and Perspectives on Frontline Workforce Development Moderator – Billy Terry, National Transit Institute Panelists: • Alex Bond, Eno Center for Transportation • John Ladd, U.S. Department of Labor, ETA • Robin Utz, U.S. Department of Education, OCTAE • Ed Watt, Amalgamated Transit Union • Janet Weisenford, ICF
12:00–1:30 PM	Lunch Break and Networking

1:30 – 1:45 PM	Workforce Development Life-cycle: Themes for Discussion
	    1. RECRUIT: Outreach, Education, and Recruitment
	    2. DEVELOP: Training, Apprenticeships, and Career Ladders
	    3. RETAIN: Retention Strategies and Considerations

1:45–3:00 PM	Breakout Session #1: RECRUIT • High demand frontline occupations • Outreach and educating potential transit workers • Recruitment Strategies – job fairs, signing bonuses/other promotions, creative advertisement, ex-offenders, etc. • Partners – school systems, community colleges, workforce systems, community organizations, veteran's groups, etc.
3:00–3:15 PM	Break
3:15–4:30 PM	Breakout Session #2: DEVELOP • Identifying skills gaps • Strategies and initiatives to fill skills gaps • Training platforms – online, classroom, etc. • Importance of hands-on, OJT in learning process • Partners – high schools, community colleges / post-secondary vocational programs, national training entities, OEMs, etc.
4:30 PM	Adjourn (dinner at 6:00 PM)

December 12, 2018

8:30–8:45 AM	Regroup
8:45–10:00 AM	Breakout Session #3: DEVELOP (cont.) • Career ladders • Supervisory and professional development
10:00–10:30 AM	Break
10:30–11:45 AM	Breakout Session #4: RETENTION • High turnover/high retirement occupations • Employee engagement/culture shift • Performance incentives/recognition programs
11:45 AM–1:15 PM	Lunch Break and Networking
1:15–3:00 PM	Closing Session: Building an Action Agenda

APPENDIX
B

Name	Organization
Stu Bass	Keystone Development Partnership
India Birdsong	Nashville Transit
Scott Bogren	CTAA
Alex Bond	Eno Center for Transportation
Jack Clark	Transportation Learning Center
Matt Colvin	AFL-CIO Transportation Trades Department
Jamaine Gibson	ATU Local 265 (VTA)
Jess Guerra	LA Trade Tech
Alvy Hughes	SMART-TD
Charles Jenkins	TWU Local 100
Alec Johnson	ATU 1005 (Metro Transit MN)
Steve Jovel	Valley Transit Authority
John Ladd	US Department of Labor
Mary Leary	USDOT/FTA
John Lister, Jr.	ATU Local 558 (Shreveport Transit)
Chris Mickkelson	Metro Transit Madison
Hiram Nix	ATU Local 689
Stephen Parker	TCRP
Jim Reid	IAMAW
Rick Roeth	Teamsters (Madison Transit)
Jeffrey Rosenberg	ATU, AFL-CIO/CLC
Mariah Stanley	COMTO
Tim Tarrant	Brotherhood of Railroad Signalmen (BSR)
Billy Terry	National Transit Institute
Robin Utz	Department of Education
Dannielle Wallace	King County Metro
Dinero Washington	Shreveport Transit (Louisiana)
Xinge Wang	Transportation Learning Center
Ed Watt	ATU
Janet Weisenford	ICF

Roundtable Discussion Questions

NATIONAL TRANSIT INSTITUTE AND TRANSPORTATION LEARNING CENTER

Advancing Transit Frontline Workforce Development Meeting

Discussion Questions

Day 1: December 11	

1:30–1:45 PM	**Workforce Development Life-Cycle: Themes for Discussion (Full Group)**
	1. Thinking across the three themes below, what key questions/issues should be prioritized for discussion in the next two days
	   • Rectuit
	   • Develop
	   • Retain

	Breakout Session Format • Roundtable discussions: Four tables, with 6–7 participants and 1 moderator. • Assigned seating on Day 1 and Day 2 to encourage networking and more effective idea generation. • Table numbers are noted on your tent card (e.g., 1/3 means Table 1 for Day 1 and Table 3 for Day 2). • The following pages contain questions for table discussions. • The moderator will facilitate 60-minute discussions under each question and make detailed notes to be shared with everyone and synthesized later for our report back to FTA. • Each table will elect a participant representative at the beginning of the discussion who will report back at the end of the session. • One table will be the main report-back for each session; the other tables will add to the list.
1:45–3:00 PM	**Breakout Session 1: Recruit (*Table 1: Report Out*)** 1. What key transit frontline occupational areas have the highest future demand in the next decade? Which ones are the particularly challenging to find qualified candidates for? How is the adoption of automation and other new technologies affecting the labor demand and supply? 2. What successful outreach efforts and recruitment strategies has your organization implemented (or are you aware of)? 3. What initiatives/programs have been implemented to equip potential candidates with the basic skills needed for entry into transit frontline jobs, e.g., pre-apprenticeship, infrastructure academy, soft skills training? 4. What partnerships (e.g., school systems, community colleges, veteran's groups, other related sectors such as infrastructure, community organizations, workforce systems) have you established to build the pipeline of future transit workers? 5. What made these strategies, initiatives and partnerships successful? Are they ripe for transfer and/or scaling up and how would/should this happen? 6. How do we measure success?

Day 1: December 11	
3:15–4:30 PM	**Breakout Session 2: Develop (*Table 2: Report Out*)** 1. What key skills and competencies are needed in the high demand frontline occupations that we identified earlier? 2. What are the major skills gaps? 3. What effective strategies and initiatives has your organization implemented (or are you aware of) to fill those skills gaps, e.g., registered apprenticeships, refresher training, mentorship, etc.? 4. What training platforms have you experimented with success, e.g., classroom, OJT, e-learning, distance learning? 5. What partnerships (e.g. labor unions, community colleges/career and technical education, regional training, national organizations, OEMs) have you established to build the skills of your existing workforce? 6. What made these strategies, initiatives and partnerships effective? Are they ripe for transfer and/or scaling up and how would/should this happen?
Day 2: December 12	
8:45–10:00 PM	**Breakout Session 3: Develop (cont.) (*Table 3: Report Out*)** 1. Describe the typical career ladders for frontline workers in your organization. 2. What effective strategies and initiatives has your organization implemented (or are you aware of) to provide promotional opportunities to your frontline workers? 3. How does your organization cultivate the supervisory and managerial skills for your frontline workers? 4. What made these strategies, initiatives and partnerships effective? Are they ripe for transfer and/or scaling up and how would/should this happen? 5. How do we measure success?
10:30–11:45 PM	**Breakout Session 4: Retention (*Table 4: Report Out*)** 1. What critical frontline occupations experience the highest turnover and retirement? 2. What effective strategies and initiatives has your organization implemented (or are you aware of) to engage, recognize, and incentivize your frontline workers? 3. Are these strategies and initiatives effective in retaining your frontline talents and why? Are they ripe for transfer and/or scaling up and how would/should this happen? 4. What are effective transfer mechanisms to share and encourage replication of these retention practices?
1:15–3:00 PM	**Closing Session: Building an Action Agenda** 1. Across the range of activities discussed earlier, what programs/initiatives appear ripe for transfer and/or scaling up, and how would/should this happen? 2. What collaborative actions could be taken by national organizations, including federal agencies, to increase adoption of these practices? 3. What are effective transfer mechanisms to share and encourage replication of these practices? 4. What additional actions items need to be added to the compiled list? 5. As you look across our discussion areas, what identified actions do you believe are most important to improving transit workforce development efforts?

Meeting Presentations

- Alex Bond, Eno Center for Transportation
- Mary Leary, Federal Transit Administration
- Robin Utz, U.S. Department of Education, OCTAE
- Xinge Wang and Jack Clark, Transportation Learning Center
- Ed Watt, Amalgamated Transit Union
- Janet Weisenford, ICF

People Development in the Transit Industry

About Eno

- Established in 1921 by William Phelps Eno

- Today is an independent, nonpartisan think tank and training institution

- Policy publications and research

- Eno Transportation Weekly

- Transit leadership courses

- www.enotrans.org

Current Eno Workforce Programs

Courses:

- Transit Executive Program
- Transit Mid-Manager Seminar
- Multi-Agency Exchange

Recent research:

- NCHRP Synthesis 49-10 on State DOT Workforce & LTAP
- TCRP F-22 and F-24, pair of projects on the frontline workforce
- Eno initiative: Pathways to Transportation Workforce Planning and Development

Three Big Problems

1. There is no consistent definition of "workforce development," particularly for front line workers

2. Available data is poorly suited to study this topic. Sources that exist are incomplete or not granular enough

3. Seats in programs don't come close to meeting needs

Definition

Improving the people-readiness and organizational structures required to meet the demands of the industry

- The industry knows this is a growing problem. There is no consensus on what to do about it.

- Workforce is a problem across transportation, but transit has unique issues

- Is there a difference between "workforce development" and "workforce planning?"

- Managers and executives belong in the conversation

- Succession planning is difficult in the public sector

Eno
Center for Transportation
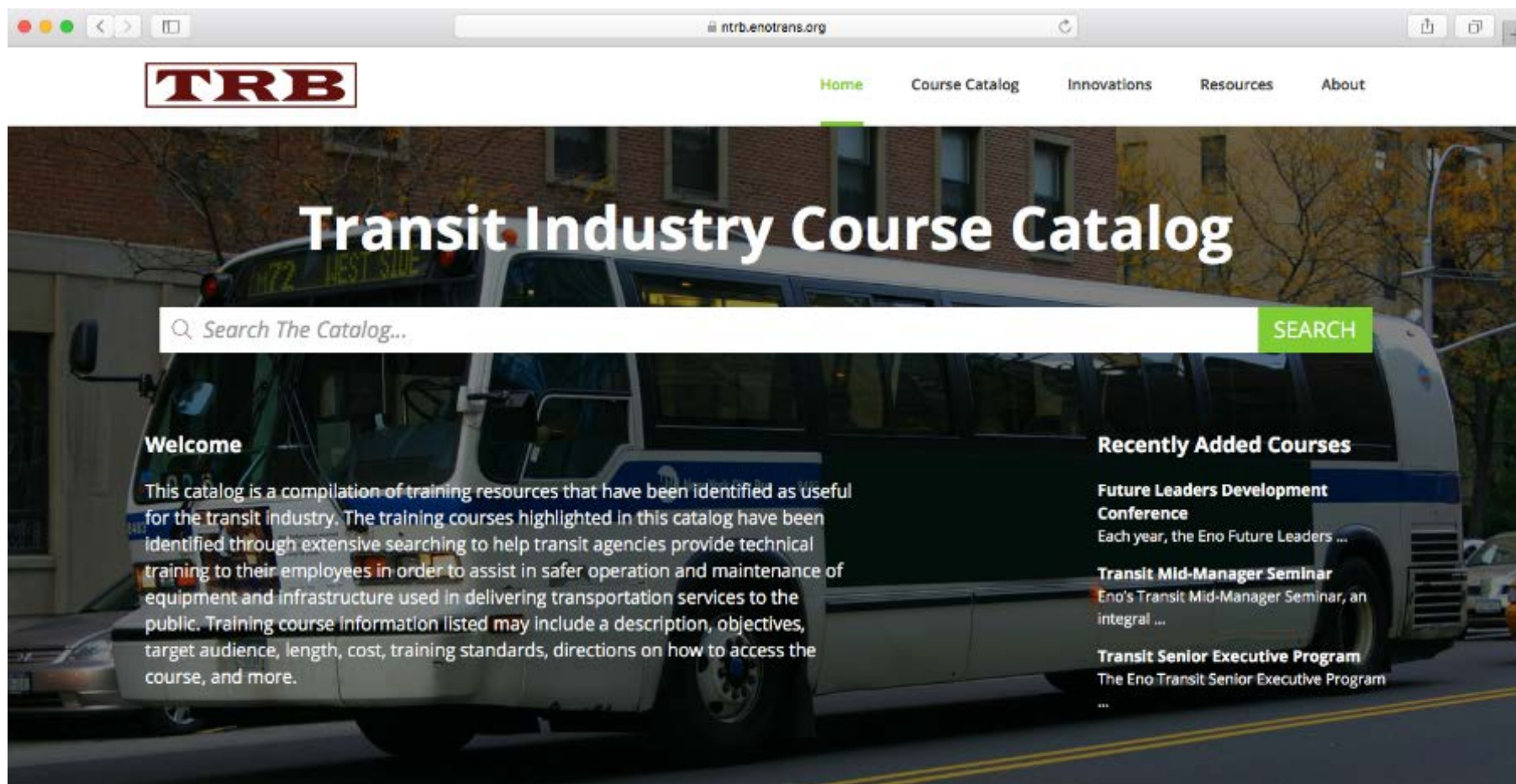
Workforce Data

- Available transit workforce data is incomplete, highly segmented, or anecdotal

- Poor data on the transit workforce make research difficult

- Policy making depends on solid research

- Extant sources have research limitations:

  - Grouping with similar non-transit occupations

  - Focused on headcount instead of competencies

  - Are based on membership and may be incomplete

Frontline Worker Training Programs

- There is a massive shortage of seats in training programs, particularly for front line workers

- Only a subset of agencies are active with external programs, most rely on internal training

- Front line workers often have low priority for funds

- Few information sources are available for employees looking for training

  - TCRP Project F-22 created a catalog of training: https://ntrb.enotrans.org

TCRP Frontline Training Catalog

https://ntrb.enotrans.org

Final Thoughts

- Reliable workforce data sources are badly needed and should be a high national priority

- Problem framing, research, and policy recommendations will follow better data

- Reform the FAST Act Section 5314 workforce development set aside (5307, 5337, 5339)

- Poaching vs. developing high demand employees

- People learn from peers

Contact Info

www.enotrans.org
@EnoTrans

Alex Bond, AICP | Director, Professional Development Programs
202-879-4714
abond@enotrans.org

Workforce Development in an Era of Emerging Technology

Mary Leary, PhD
Deputy Associate Administrator
FTA Office of Research, Demonstration, and Innovation

U.S. Department of Transportation
Federal Transit Administration

Emerging Public Transportation Workforce Needs

Information Technology Skills including database administration, analysis, integration

Transit Automation Operators/Customer Service

New bus technology maintenance personnel

Managing public/private partnerships and issues around private (personally identifiable information-PII) and/or proprietary data

2
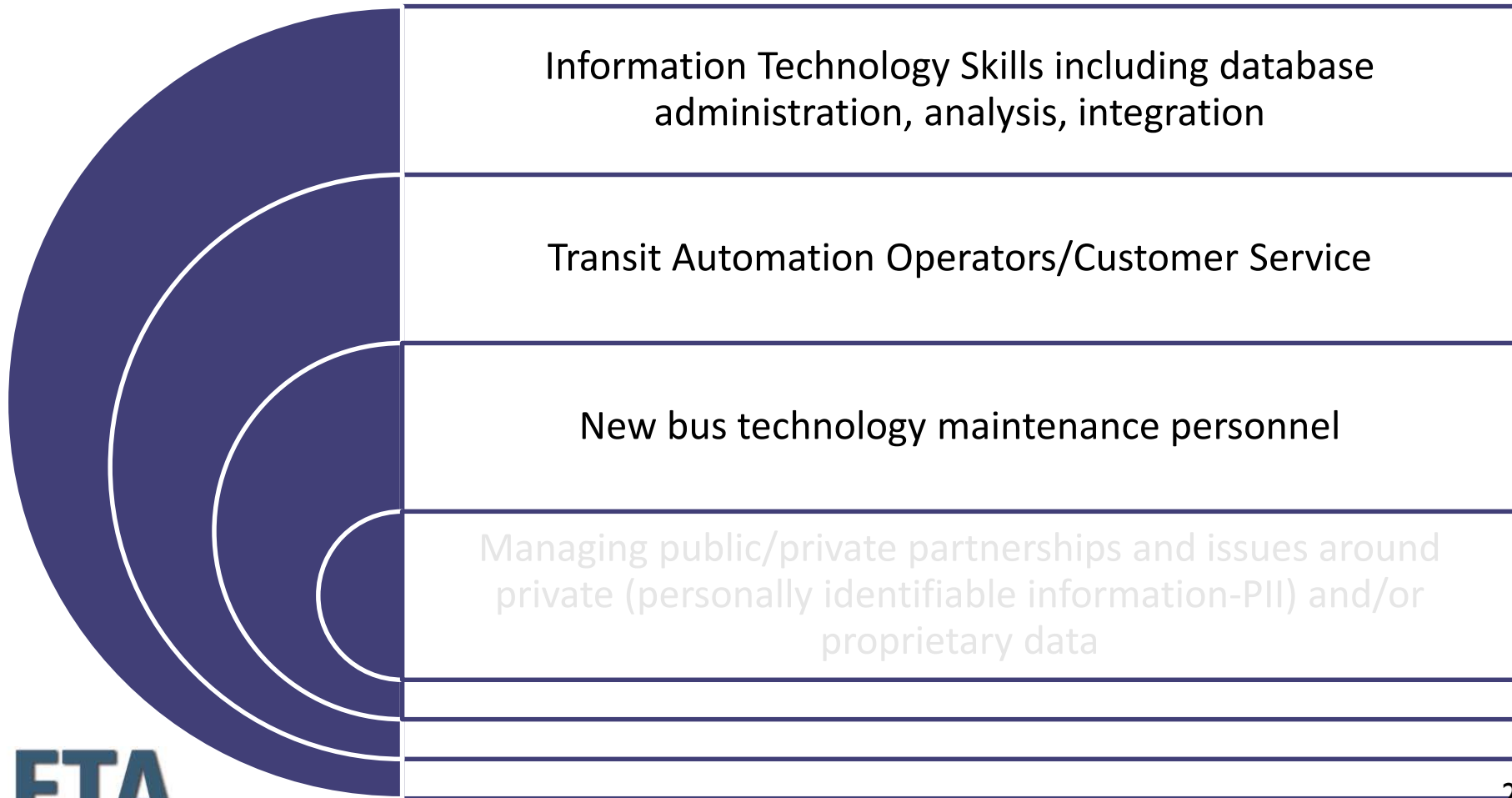
What the industry is telling us about the emerging workforce

TRAC* - A roadmap/transition guide to new career roles is needed

Can employees whose roles change be retrained

Significant differences across the country in transit models

Need Documented understanding of key competencies in public transportation

TRAC – Transit Research Analysis Committee

FTA

FEDERAL TRANSIT ADMINISTRATION

Public Transportation Opportunities

Career ladder opportunities

Interesting Technology Positions

Career 'lattice'

Apprenticeships

Frontline Positions

Federal Transit Administration (FTA) Current Federal Public Transportation Law Workforce Elements – Chapter 53 of Title 49 U.S.C.

Eligible Projects: Funds tech. assist., standards development, human resources and training activities, to include the new "Innovative Public Transportation Frontline Workforce Development" Program – requires 50% match for recipients of Formula funds

Formula Grant Funding for Workforce Programs: Allows use of ½ of 1% from urbanized area formula grants for Workforce Development and training eligible activities at 80% federal share ($76M in FY2016)

FTA
FEDERAL TRANSIT ADMINISTRATION

Innovative Workforce Results to Date – Workforce Grants

3 rounds over the last six years (2011, 2012, 2015) over $ 20M and 45 recipients

Grantee activities

- New entrants
- Incumbent worker training
- Youth engagement/outreach
- Internships, apprenticeships, work-based skills training
- Curriculum development
- New technology training

For information on results to date see FTA's Report to Congress at the following URL:
https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/64336/ftareportno0109.pdf

FTA
FEDERAL TRANSIT ADMINISTRATION

Final Reports on FTA's Workforce Programs are in development

- Some High Level Takeaways:
    - We need to have a set of performance measures for all public transportation workforce programs
    - Partnerships between the public transportation agency/Dept. of Labor programs at the local level/Community or Technical Colleges at the local level are essential
    - Wraparound services funded outside of FTA funds can make a big difference
    - Public Transit Agencies can use other Federal funds as match for workforce programs including Dept. of Labor funds

FTA
FEDERAL TRANSIT ADMINISTRATION

Next Steps

- NTI Bus Maintenance Summit
- New FTA Funded resources to provide workforce technical assistance to public transit agencies
- DOT Workforce Automation Studies are in process
- Find more ways like today to facilitate peer exchange and peer learning

STATEMENTS ON THE PASSAGE OF PERKINS V

"We will continue to prepare students for today's constantly shifting job market, and we will help employers find the workers they need."

President Donald J. Trump

"Congress came together to expand educational pathways and opportunities and give local communities greater flexibility in how best to prepare students for the jobs of today and tomorrow."

Education Secretary Betsy DeVos

Time to reTHINK

2006 ● ○ iPhone ● Netflix ● Great Recession ● Drones ● Autonomous Vehicles ○ 2018
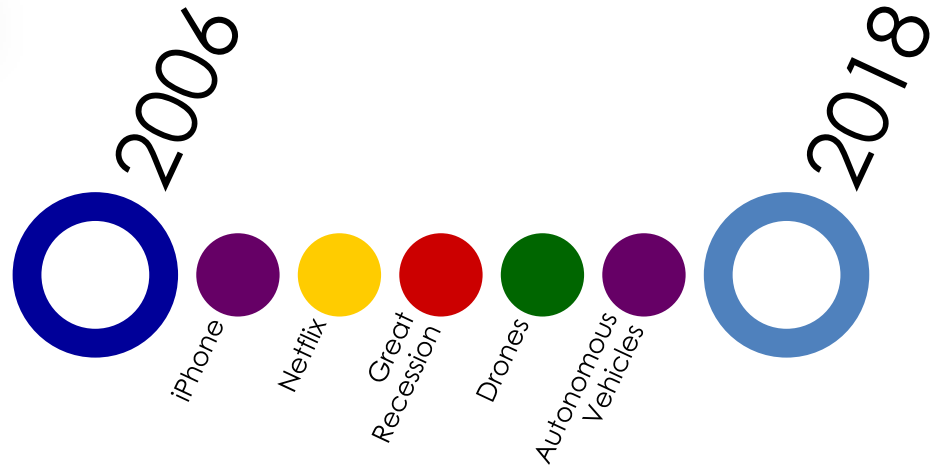
- Unemployment - 3.9 %
- Skilled occupations - 13% gap
- Health care - 1.1 million unfilled
- Manufacturing (2015-2025) - 2 million unfilled

reTHiNK SCHOOL

Question EVERYTHING

WHY…
Limit educators?
Assign kids to schools based on their address?
Group kids by age?
Force all students to learn at the same speed?
Measure learning by hours and days?
Suggest a college degree is the only path to success?
Believe education stops at graduation?

to ensure NOTHING limits students
from being PREPARED for
WHAT COMES NEXT.

TIME TO reTHINK

- How do you define/approve high-quality CTE programs?

- How can work-based learning, including "earn and learn programs" such as apprenticeships, be the rule and not the exception?

- What is the best role for employers in program development and delivery?

- How do we build the pipeline of teachers necessary to deliver the critical pathways local communities need?

- What is your state's level of commitment to Career Pathways and Programs of Study?

- How can "reserve" funds best be used to spark innovation and incentivize "high-quality?"

- What is the right secondary/postsecondary "split of funds" given today's environment?

PERKINS VISION

Expand opportunities for *every student* to explore, choose, and follow vertically-integrated *career pathways* to *earn credentials* of value.

Levers of Opportunity

- **Aligning CTE Programs**
  - State and local collaboration with workforce boards
  - Opportunity to submit WIOA combined plans
  - Comprehensive local needs assessment
  - Use of the reserve

- **Fostering Collaboration**
  - Extensive collaboration in State plan development
  - Involvement of the Governor's office
  - Timeframe for public hearings
  - Consultation with adult education agency on split of funds
  - Statewide industry or sector partnerships to develop and implement Programs of Study

LEVERS OF OPPORTUNITY

- **STRENGTHENING CTE TEACHER AND FACULTY PIPELINE**
  - One of four required State leadership activities
  - Included as part of local needs assessment

- **EXPANDING THE REACH AND SCOPE OF GUIDANCE AND COUNSELING**
  - Middle school
  - Special populations recruitment
  - Informing parents and students about programs

- **PROMOTING INNOVATIVE PRACTICES**
  - Programs of study
  - Work-based learning, including apprenticeships
  - Dual and concurrent enrollment programs and early college high schools
  - Pay for Success

LEVERS OF OPPORTUNITY

- **STATE AND LOCAL-DRIVEN CONTINUOUS IMPROVEMENT**
  - Common student definitions and measurement approaches
  - State-determined levels of performance
  - Disaggregation of data
  - Program quality indicators
  - Public reporting of data
  - Program improvement plans
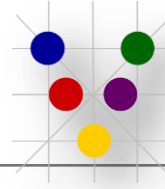
January 2019: Perkins V State Plan Guide

http://cte.ed.gov

CTE@ed.gov

Advancing Transit Frontline Workforce Development: Background and Current Status

December 11-12, 2018

Xinge Wang, Deputy Director
Jack Clark, Executive Director

)))))) TRANSPORTATION LEARNING CENTER

Overview

I. About the Transportation Learning Center

II. Transit Workforce Challenge and Opportunity

III. Industry-wide Solutions

1. National Training Consortia

2. National Frameworks for Registered Apprenticeship

3. Funding

IV. Regional and Local Implementation

1. Integrated Career Pathways and Ladders

2. Local Registered Apprenticeships

3. Models for Implementation: VTA IWI, Keystone, SCRTTC, TWU TUF, and LA Metro

V. Metrics

The Transportation Learning Center

The Transportation Learning Center is a **nonprofit** organization dedicated **to improving public transportation** at the **national** level and within **communities**. To accomplish this mission, the Center builds **labor-management training and apprenticeship partnerships** that improve organizational performance, expand **workforce knowledge**, **skills** and **abilities**, and promote **career advancement**.

Engagement: Transit and Rail Training Partnerships Location Map
National Sponsors and over 40 locations that have worked together to build shared solutions

Everett
Seattle
Tacoma
King County
Portland
Minneapolis
Albany
Buffalo
Syracuse
Boston
Newark
Salt Lake City
Allentown
Altoona
New York City
Sacramento
San Francisco
Oakland
San Jose
San Mateo
Utah
Des Moines
Chicago
Cleveland
Pittsburgh
Indianapolis
Harrisburg
Philadelphia
Columbus
Baltimore, MD
Washington, DC
Denver
St. Louis
West Virginia
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Hampton Roads
Los Angeles
San Diego
Nashville
Charlotte
Metro
Atlanta
Mississippi
Dallas
Austin
Houston
Miami
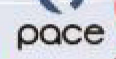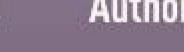
IBEW Local 6 (San Francisco)
IBEW Local 9 (Chicago)
IBEW Local 103 (Boston)
IBEW Local 465 (San Diego)
IBEW Local 1245 (Sacramento)

SEIU Local 1021
(Sacramento)

TWU Local 100 (NYC)
TWU Local 208 (Columbus)
TWU Local 234 (Philadelphia)

TRANSPORTATION LEARNING CENTER

Transit Frontline Hiring and Training Needs

New Technologies & Automation

Expansion of Services/New Service Models

Competition from Other Industries

Aging Workforce

Challenges with Hiring & Training

Image of Industry and Jobs
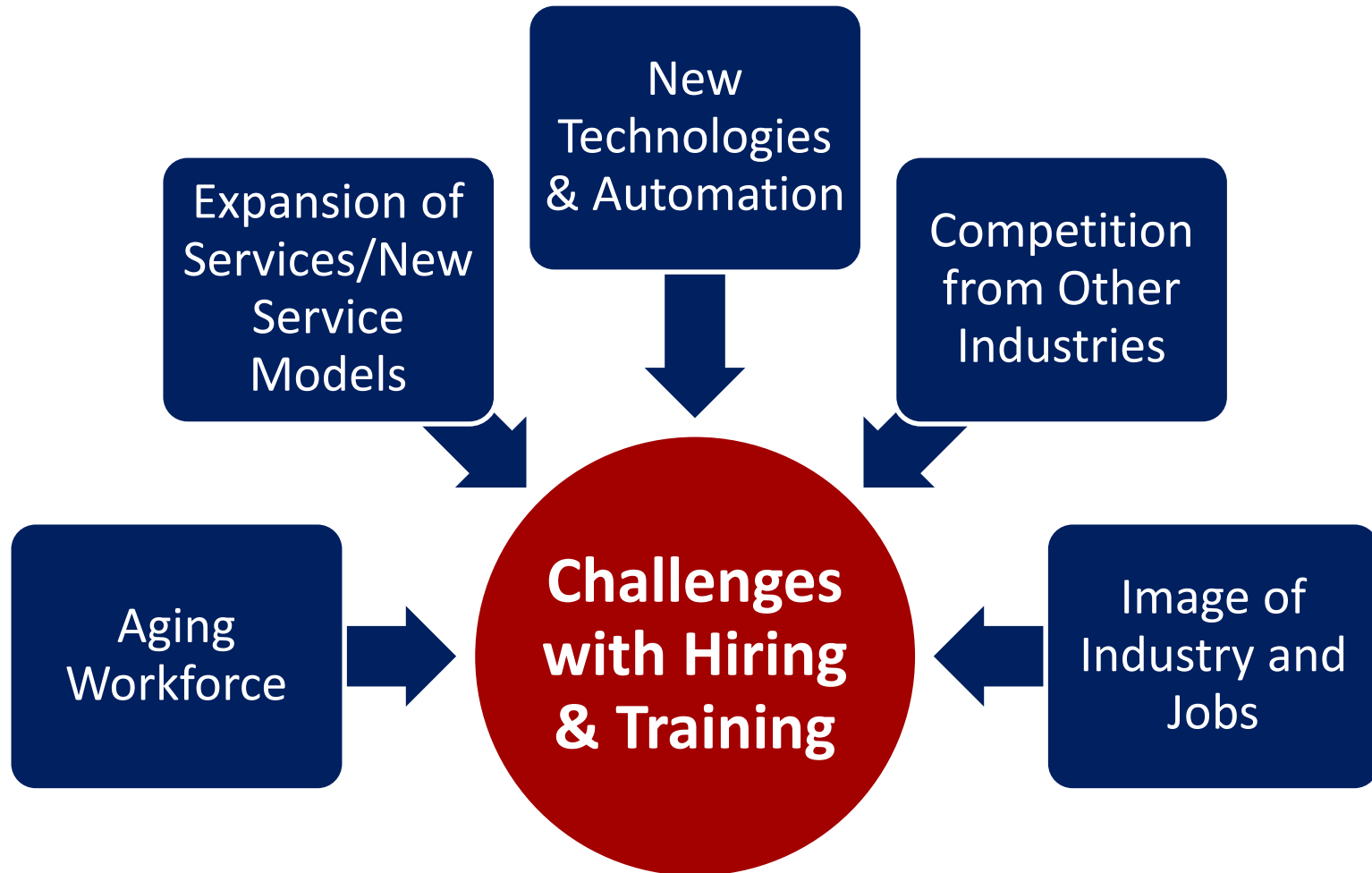
Transit has the highest percentage of older workers among all transportation sectors
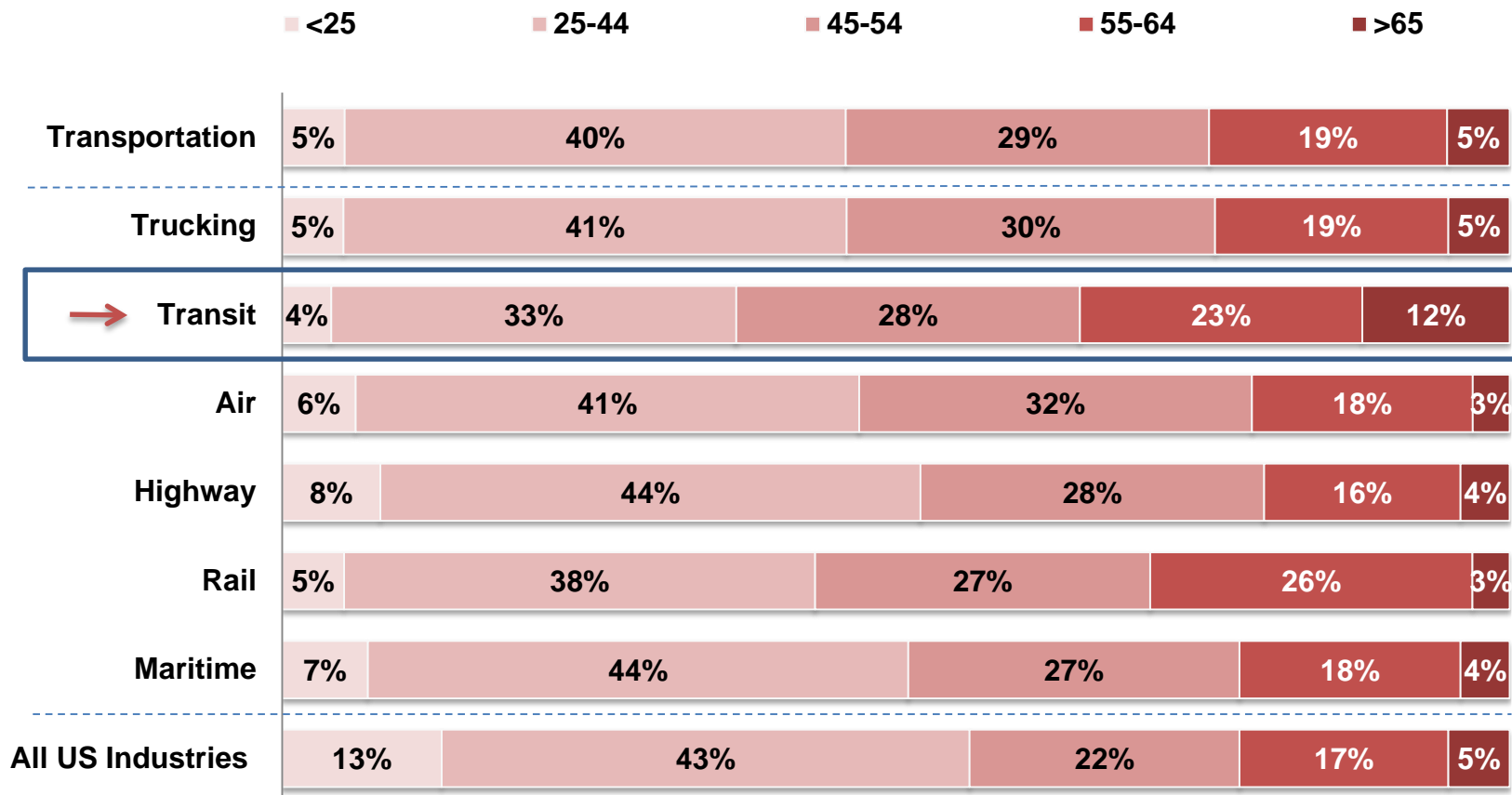
Legend: ■ <25 ■ 25-44 ■ 45-54 ■ 55-64 ■ >65

Sector	<25	25-44	45-54	55-64	>65
Transportation	5%	40%	29%	19%	5%
Trucking	5%	41%	30%	19%	5%
Transit	4%	33%	28%	23%	12%
Air	6%	41%	32%	18%	3%
Highway	8%	44%	28%	16%	4%
Rail	5%	38%	27%	26%	3%
Maritime	7%	44%	27%	18%	4%
All US Industries	13%	43%	22%	17%	5%

Source: Data Report on Transportation Workforce Needs by the U.S. Departments of Education, Transportation and Labor.

126 Percent of Today's Transit Workforce Will Have to Be Hired and Trained in the Next 10 Years; 90 percent are frontline workers

Transit Jobs Today 400k

10-Year Transit Job Openings 500k +
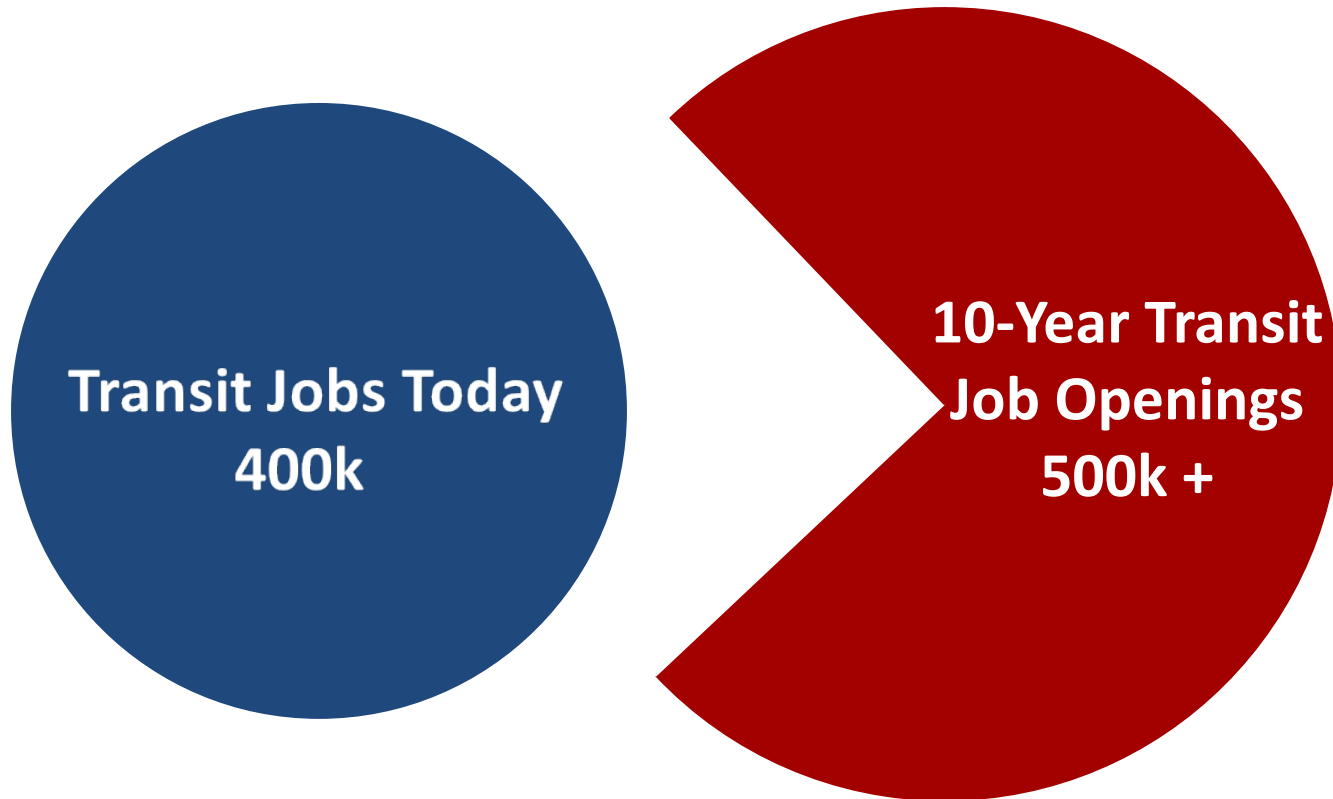
Source: TLC Analysis of BLS and NTD data.

Women <u>under-represented</u>, esp. in technical positions
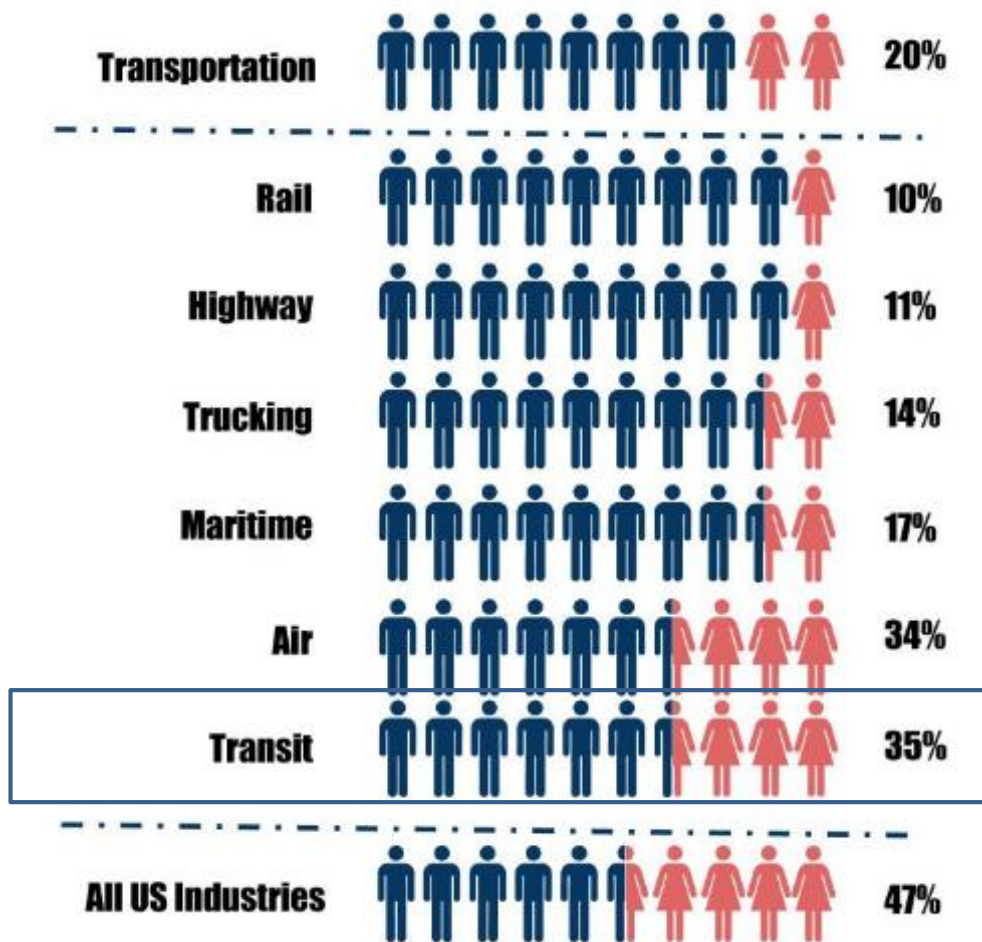
Source: Data Report on Transportation Workforce Needs by the U.S. Departments of Education, Transportation and Labor.

African-Americans and Hispanics underrepresented in higher paid and skilled transit & transportation jobs (1)

2014 Employment in Transportation Jobs by Race
(Annual Averages)

Legend: ■ Black or African American   ■ White   ■ Asian   ■ Other Racial Categories

Generally Higher Wages, Skills, and Career Potential

Occupation	Black or African American	White	Asian	Other Racial Categories
Aircraft pilots	2%	97%	1%	1%
Aircraft mechanics	9%	81%	7%	3%
Bus and truck mechanics	8%	89%	1%	3%
Truck drivers	16%	79%	3%	3%
Bus drivers	26%	68%	3%	4%
Laborers	16%	77%	3%	4%
Vehicles cleaners	23%	71%	2%	4%
All US Occupations	11%	80%	6%	3%

Generally Lower Wages, Skills, and Career Potential

Source: Data Report on Transportation Workforce Needs by the U.S. Department of Education, Transportation and labor.

9

African-Americans and Hispanics underrepresented in higher paid and skilled transit & transportation jobs (2)

**2014 Employment in Transportation Jobs by Ethnicity
(Annual Averages)**
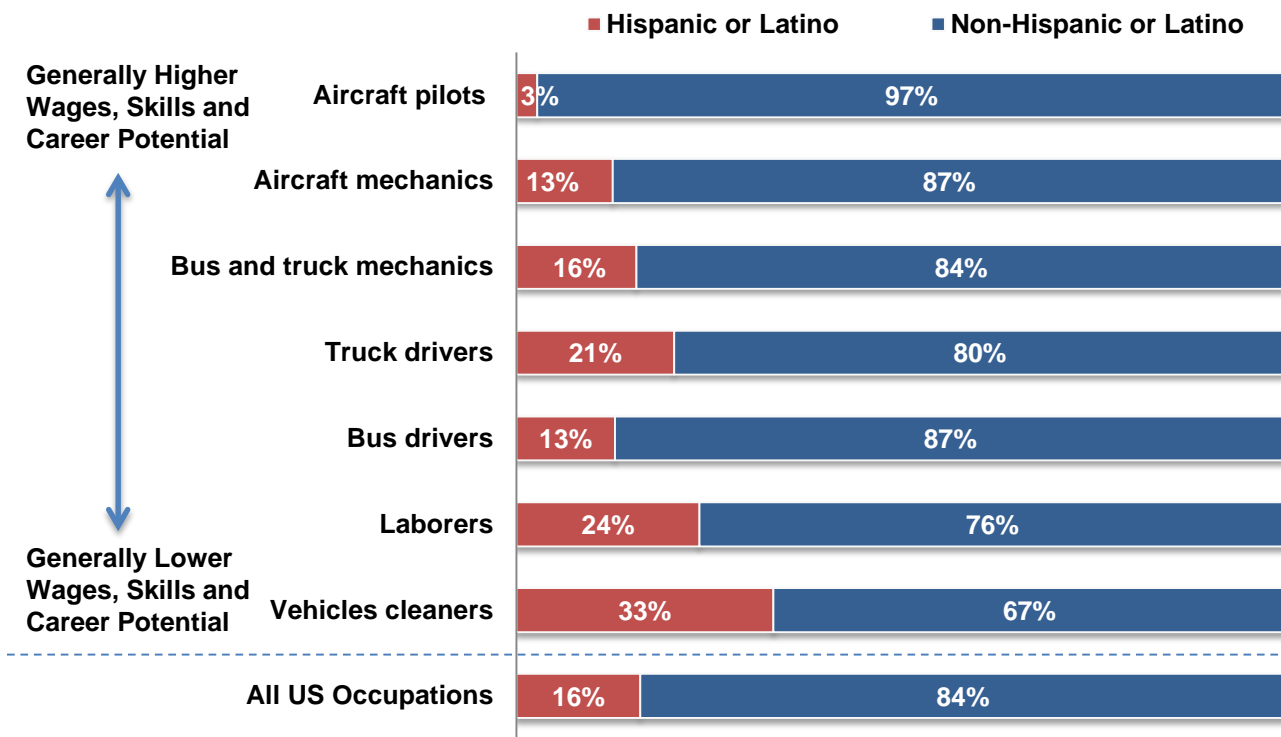
Source: Data Report on Transportation Workforce Needs by the U.S. Department of Education, Transportation and labor.

10

Projected annual job openings are 68% larger than annual completions of related education programs across selected transportation job groups
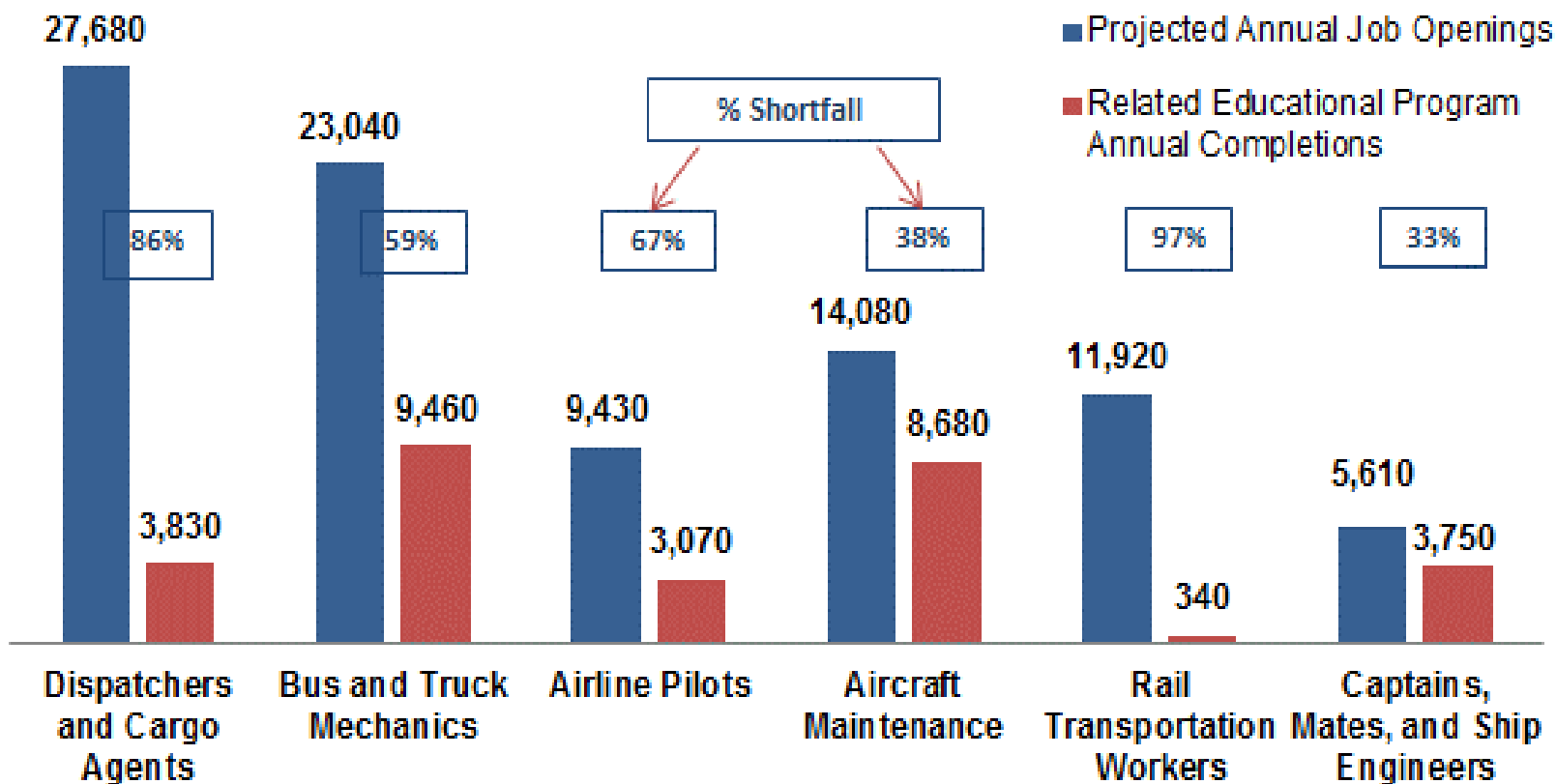
Source: Data Report on Transportation Workforce Needs by the U.S. Department of Education, Transportation and labor.

Industry-wide Solutions

- **National Training Consortia**
- **Registered Apprenticeships**
- **Funding**

National Training Consortia

- Transit Maintenance Occupations
  - Elevator/Escalator ; Signals Maintenance; Rail Car Maintenance
- Transit agency contribution matched by DOT/FTA
- Joint Development by Local SMEs and Center ISDs
- Instruction-ready course materials, safety integrated
- Train-the-Trainer courses

"One of the big problems that we've had is that when new cars come on the property, the employees that are there at that time get a lot of training —and the cars may be on the property for 20-30 sometimes even 40 years... Over time those resources disappear, and so as people retire the knowledge leaves. So in working with the other authorities around the country in this Consortium, we're really able to rebuild a library of training material to be able to deliver to our employees."

Doug MacElhiney -- Maintenance Instructor -- MBTA, Boston

Rail Car Consortium Member Locations

Bay Area Rapid Transit	SEIU 1021	SFMTA (MUNI)	IBEW 6
MBTA (Boston)	ATU 589	Sac RT	IBEW
Denver RTD	ATU 1001	Metro Transit	ATU
Greater Cleveland RTA	ATU 268	Charlotte Area Transit System	PATCO
DART (Dallas)	ATU 1338	San Diego MTS	VTA and ATU 265 (Pending)
Maryland MTA	ATU 1300	NFTA	ATU 1342
WMATA	ATU 689	CTA	ATU 308

Agencies being recruited — 10
Member agencies — 15
Local unions — 15

Cost Sharing
3%
Individual Agency's Share of Cost
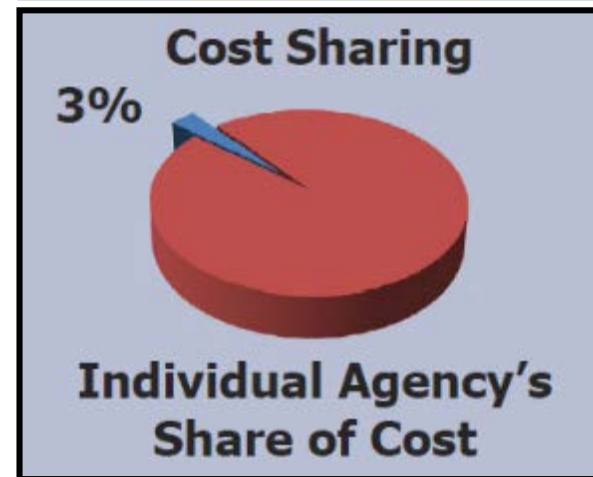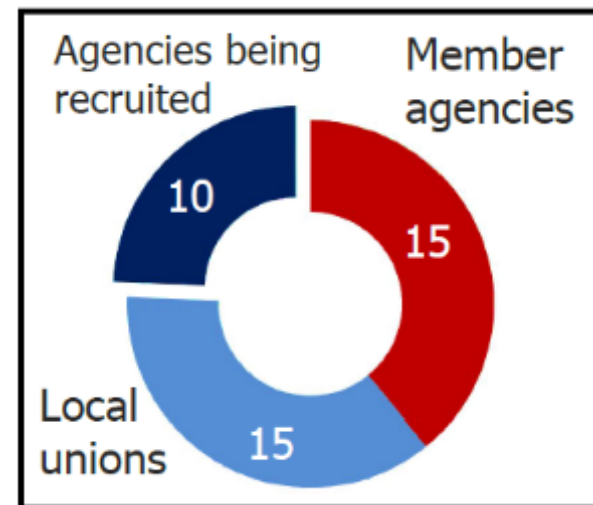
Backbone: Industry Training Standards

- Developed by subject matter experts through a joint labor/management process – started **10 years** ago

- Adopted by **American Public Transportation Association** as National Standards

- Used by instructors and trainers to ensure minimum standards are met when curriculum is developed

- **Backbone** of courseware development

- Should be continuously **reviewed/updated**

- Rail Car Maintenance alone Contains over **3,000 learning objectives**

APTA STANDARDS DEVELOPMENT PROGRAM

APTA RT-RMT-RP-001-10

RECOMMENDED PRACTICE
American Public Transportation Association
1666 K Street, NW, Washington, DC, 20006-1215

Approved June, 2010
Vehicles Training Joint Steering Committee

Rail Vehicles Maintenance Training Standards

Abstract: This *Recommended Practice* establishes standards for a program of rail vehicles maintenance training.

Keywords: training, rail vehicles

Summary: In response to the transit industry's need for rail vehicles maintenance training, the Transportation Learning Center has partnered with APTA, transit agencies and unions representing transit workers to develop these joint labor-management training guidelines and recommended training practices.

Scope and purpose: The curriculum, courseware and training guidelines adopted by the group and contained in this *Recommended Practice* are designed to meet or exceed the licensing requirements of jurisdictions, which currently or in the future, may legislate professional licensure or certification for rail vehicle technicians. The apprenticeship program will ultimately be registered by the U.S. Department of Labor's Office of Apprenticeship.

This Recommended Practice represents a common viewpoint of those parties concerned with its provisions, namely, transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. The application of any standards, practices or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of a rail transit system's operations. In those cases, the government regulations take precedence over this standard. APTA recognizes that for certain applications, the standards or practices, as implemented by individual rail transit agencies, may be either more or less restrictive than those given in this document.

National Standards-based Courseware

Course 106: Introduction and Overview of HVAC Systems

Tags: rail car, introduction, hvac

The purpose of the *Introduction and Overview of HVAC Systems* course is to provide participants with an orientation to rail car HVAC, basic principles and key components.

Rating: Not yet rated | Contains 25 Documents | More information »

Course 104: Introdu... APS and Battery Sy...

Tags: rail car, overview, introduction,

Course 104, *Introduction and Over...* module course that provides partici... APS and battery systems and prep... rail car maintenance facility.

Rating: Not yet rated | Contains 29...

Course 204: Inspect... APS and Battery Sy...

Tags: rail car, maintenance, inspection...

Course 204, *Inspection and Mainte...* three-module course that provides... inspecting and maintaining APS &...

Inspection and Maintenance of APS and Battery Systems

Module 2
Auxiliary Power Supply Systems
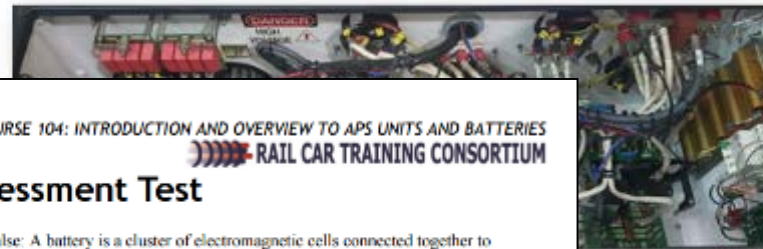
COURSE 104: INTRODUCTION AND OVERVIEW TO APS UNITS AND BATTERIES
>>>> RAIL CAR TRAINING CONSORTIUM

Pre-Assessment Test

1. True or False: A battery is a cluster of electromagnetic cells connected together to produce a required nominal DC voltage.

2. True or False: Transversing motions may be described as back-and-forth or up-and-down motion.

3. Which two organs in the human body are most sensitive to electrical shock?

4. List three examples of typical AC loads on a railcar.

of HVAC Systems

Course 106

PARTICIPANT GUIDE

>>>> RAIL CAR TRAINING CONSORTIUM

Course 104 Module 1 Quiz ANSWERS for Instructor

Module 2: Power Collection and Shop Power
Course 104 Module 2 Instructor Guide
Course 104 Module 2 PowerPoint Slides
Course 104 Module 2 Quiz for Participants
Course 104 Module 2 Quiz ANSWERS for Instructor

Module 3: Auxiliary Power Supply

Accomplishments

El/Es Consortium

6 Large Transit Agencies

40 courses

Signals Consortium

23 Agencies: Commuter & Transit Rail

31 courses

Rail Car Consortium

16 Agencies:

Transit Rail

35 courses

Train-the-Trainer

Mentor Training

College Credit

Updating Training Standards and Courseware

Courseware Validation

Local Registered Apprenticeship

Transit Apprenticeship Initiative

- A program overseen by US DOL that connects job seekers looking to learn new skills with employers looking for qualified workers

- Combine/alternate work-based with school-based learning; classroom and structured OJT

- Prevalent in European countries

- US Goal - doubling the number of Americans in registered apprenticeship

- Transit's unique position to expand apprenticeship to address future workforce needs

- College Credit

Registered Apprenticeships in Transit:
Five Frontline Occupations Approved by US DOL

Bar chart showing five occupations, each with a "Complete" bar:
- **Complete** — Bus Maintenance Technician
- **Complete** — Elevator /Escalator Technicians
- **Complete** — Rail Vehicle Technicians
- **Complete** — Coach Operators
- **Complete** — Signals Maintainers
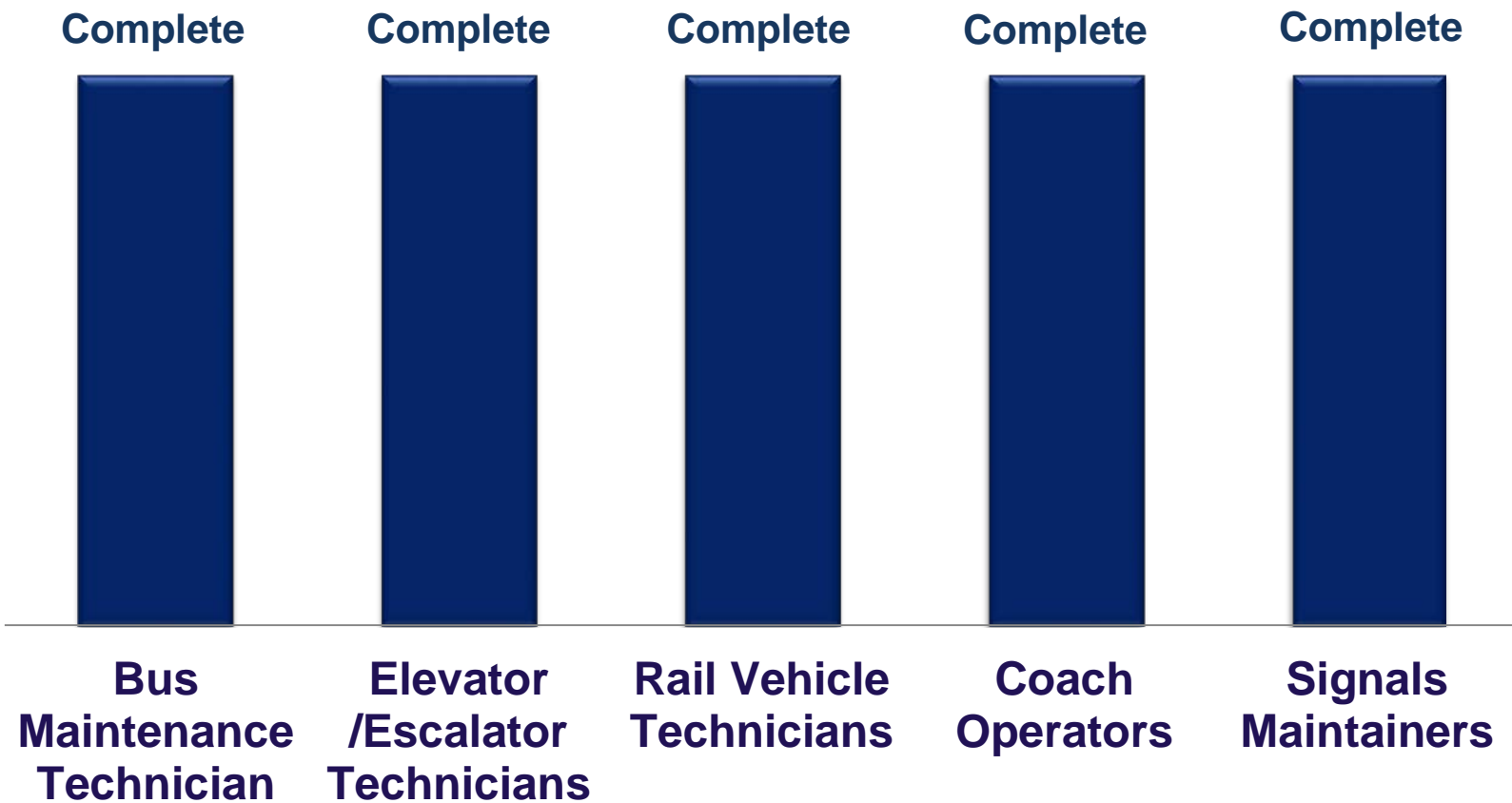
Potential Sources of Funding

Transit Frontline Training

- DOT (FTA Innovative Workforce Development)
- Transit Agencies: Operating Budget
- Vendor/OEM
- Other Partners (Education)
- State Grants (e.g. Apprentice-ship Incentive)
- DOL (ETA Apprenticeship, Am Promise, etc.)

Integrated Career Pathways through Apprenticeship:
Linking School-Based and Work-Based Learning
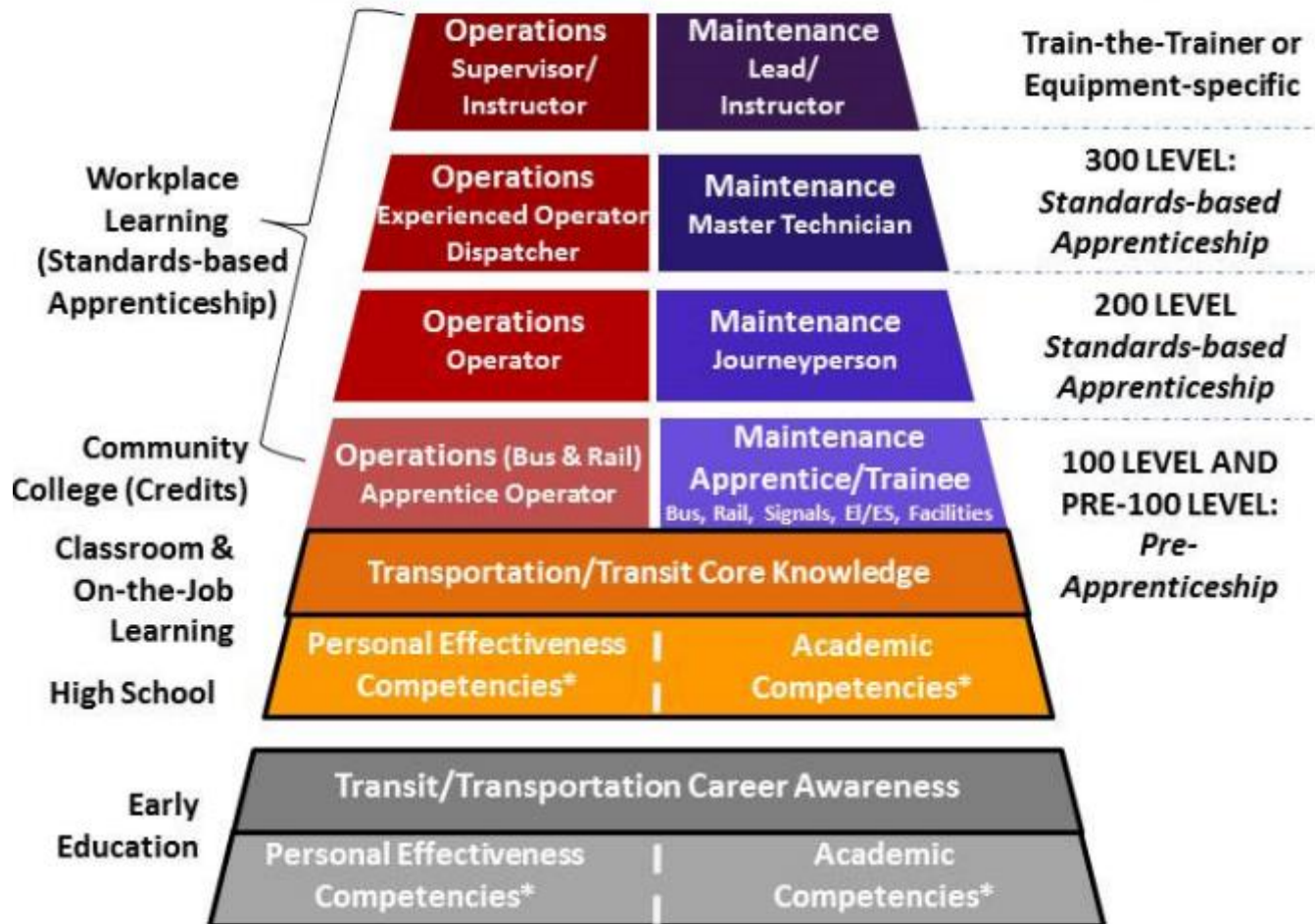
Source: TLC graphic building on US DOL Competency Model on Transportation, Distribution and Logistics.
* See DOL Competency Model for details: http://www.careeronestop.org/competencymodel/competency-models/transportation.aspx

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Local Apprenticeship Implementation

- 25 transit agencies and their unions partnering under the national program

- Local Joint Apprenticeship and Training Committees

- Partnership with schools and workforce systems

- Outreach to underrepresented populations – women, minorities and veterans

- Mentor Training and Train-the-Trainer

- Classroom and structured OJT (mentorship)

- Courseware available to Signals, Rail Car and El/Es Training consortium members

- Apprenticeship Readiness using the Transit Core Competencies Curriculum (TC3)

VTA Joint Workforce Initiative

- Partnership between ATU Local 265 and VTA, formally negotiated

- Early attention to career ladder progression in technical crafts led to full apprenticeship

- Innovative model of apprenticeship for transit coach operators effectively addresses problem of high turnover among operators

- Ongoing partnership has reached out to workforce boards, community colleges for assistance in funding and support in training

- With external funding, San Jose partners have reached out to community for recruitment and training

- Model for replication

Keystone Transit Career Ladder Partnership

- Statewide effort that was funded for more than a decade and trained workers in every county of Pennsylvania

- Partnership involving management and labor at local level, PPTA, PA AFL-CIO statewide

- Training needs determined by skills gap analysis

- Innovative outreach to youth in Philadelphia through internship programs allowing city youth to work summer jobs in maintenance

- Mentoring proved a key component of successful training and helped to make youth internship successful, too

- Documented return on investment

Southern CA Regional Transit Training Consortium

- A training resource network comprised of:
  - Community Colleges and Universities (7)
  - Transit Agencies (10)
  - Public and Private Organizations (1 labor, 1 association, 2 private industry)
- Focused on the development and delivery of training and employment of the transit industry workforce
- Providing training needs assessments and analysis
- Maintaining an inventory of available resources and courses
- Delivering state-of-the-art training
- Developing standards for transit vehicle repairs

TWU Local 100 Training Upgrade Fund

- Partnership between TWU Local 100 and NYC Transit

- "Transit Certificate Program" where members in entry level titles can broaden their promotional opportunities. There are 3 courses:

  – Job Duties of a Specific Promotional Title

  – Worker Health and Safety (3 college credits)

  – An Overview of Transit: A History of the Transit System and issues faced by the Transit Workforce (3 college credits)

- TUF also offers members a variety of other courses including: Computer, Technical (electricity, electronics, AutoCAD, fiber optics), ESL, College prep, Basic skills, Professional, Professional Opportunities, Tuition reimbursement

LA Metro – Transportation School

- Partnership between L.A. Metro and L.A. County

- The school will be the entry point into Metro's career pathway initiative intended to develop its future workforce

- The school's curriculum will be developed to teach students transferrable STEAM industry skills focused on science, technology, engineering, arts and math

Training Pays for itself Many Times Over

Return on Training Investment Found to be 745%

Legend:
- Training Investment
- Middle Estimate on Savings from Training
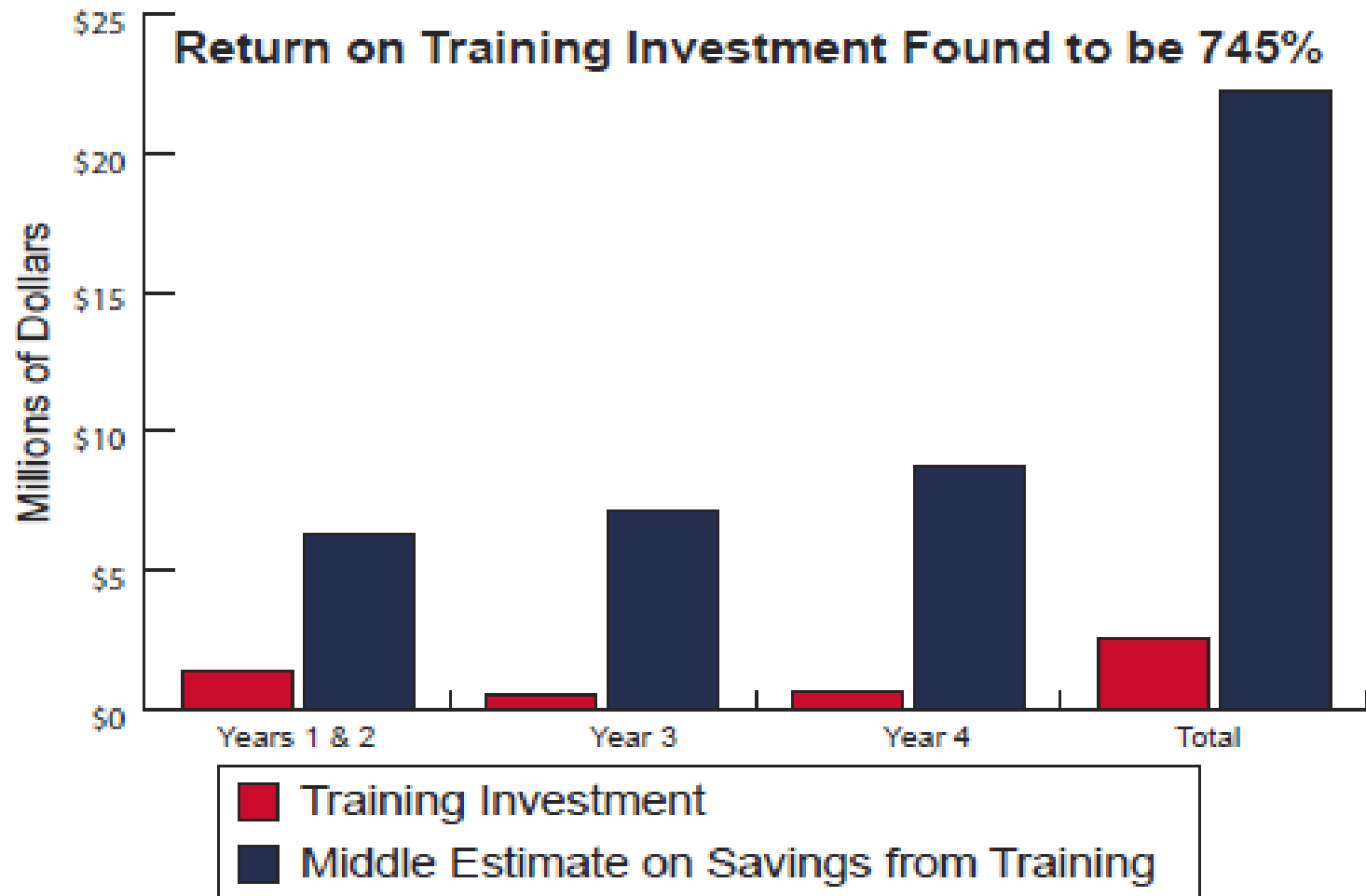
WMATA Escalator Availability Improves

Escalator Availability

Year	Availability
2011	84%
2012	90%
2013	92%
Today	94%

Source: WMATA Escalator Status Report
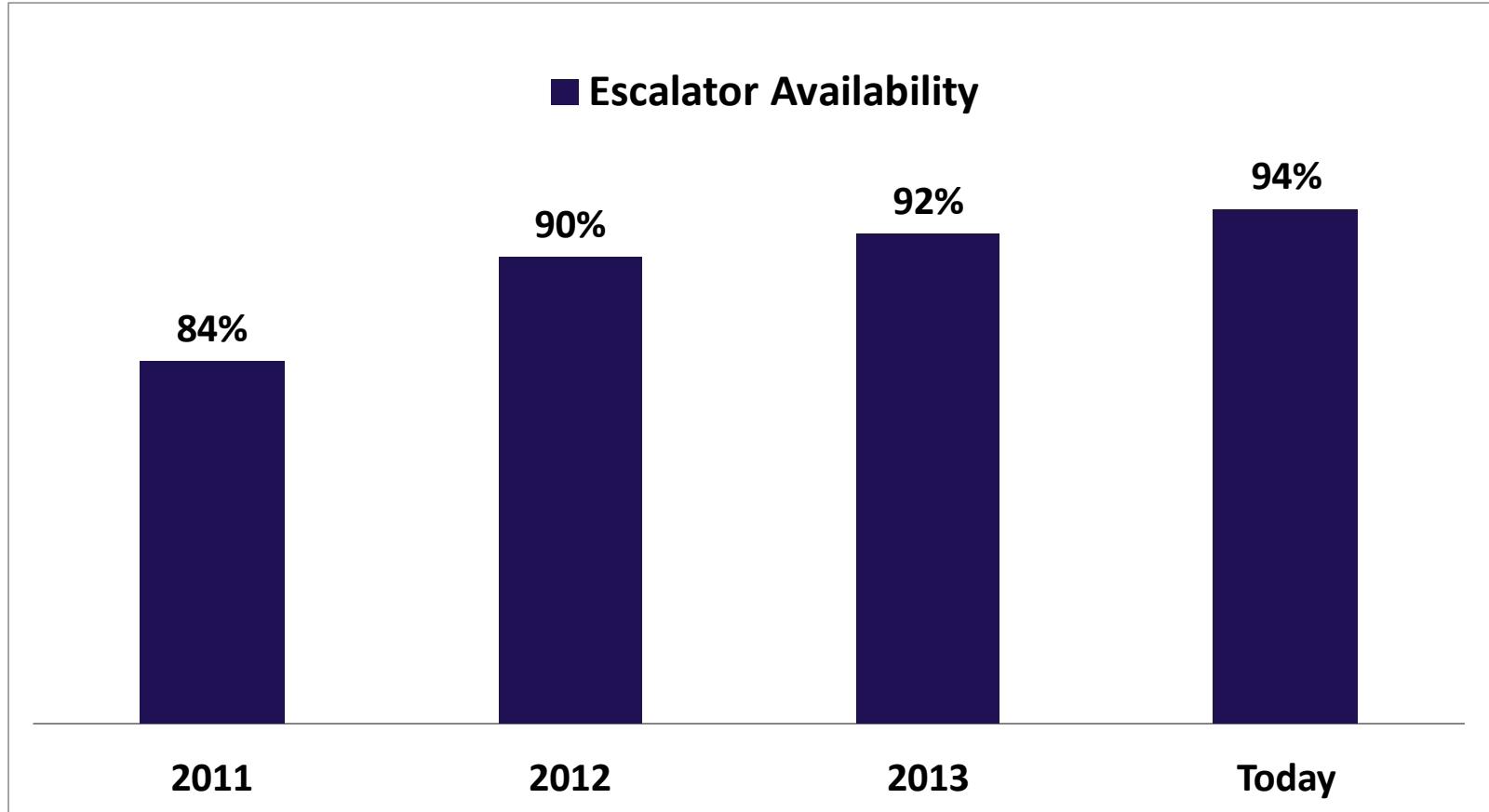
Consortium Cultivates In-house Expertise and Saves EI/Es Maintenance Costs

EI/Es Maintenance Labor Cost Comparisons
External vs. In-house for 2-Technician Crews

	Estimate	External Contractors (2 person crew)	In-house Specialists (2 person crew)	Hourly Savings (2 person crew)	Annual Savings (based on 20 F/T technicians)
Agency A	Low	$380	$136	$217	**$4,336,000**
	High	$558	$163	$422	**$8,440,000**
Agency B	Low	$400	$130	$270	**$5,400,000**
	High	$550	$130	$420	**$8,400,000**

Source: TLC preliminary analysis based on raw data from two EI/Es consortium member organizations

Questions? Comments?

Contact the Transportation Learning Center

Jack Clark
Executive Director
301.565.4716
jclark@transportcenter.org

Xinge Wang
Deputy Director
301.565.4715
xwang@transportcenter.org

Advancing Transit Frontline Workforce Development Meeting

♦

Ed Watt
Director of Special Projects
Amalgamated Transit Union

December 11-12, 2018 Tommy Douglas Conference Center ♦ Silver Spring, MD

WORKFORCE TRAINING

1. INCEPTION

2. DEVELOPMENT

3. DELIVERY

BROKEN:

R

– The only way to describe employee relations

– Training can be an important breakthrough

Consultation and Communication

Employees shall be:

- involved in the development and review of policies and procedures to manage risks;

- consulted where there are any changes that affect workplace health and safety;

- represented on health and safety matters; and

- The employer shall make arrangements for workers and their safety and health representatives to have the time and resources to participate actively in the processes of organizing, planning and implementation, evaluation and action for improvement of the H&S management system.

Effective Front-line Worker Involvement

- Organization leaders encourage collaboration between labor and management to improve organizational safety.

- Training standards are developed jointly with labor leadership, or where workers are not represented, front-line workers.

Indicators of Effective Safety Management (from Appendix)

- **A joint union-management committee identifies and resolves safety issues .**
  - **Must be a real partnership.**
- Competing pressures to safety are discussed openly.
- Safety performance measures (leading indicators) are part of everyone's performance management plan and evaluation.
- Employee retention rates and absentee rates are evaluated for any issues with regard to safety.
- Employees assess their supervisor's concern about safety.
- Supervisors' safety attitudes are assessed and corrective actions taken.

Excerpts from TRACS Report on Mitigating Assault in Bus and Rail

- Highlight employee involvement in every stage of the risk management process;

- Employees and their representatives should be involved in the development and review of policies and procedures to manage risks, consulted when there are changes that affect workplace safety, represented on safety matters, and informed as to who is their employee safety representative and specified management appointee.

A FEW SUGGESTIONS

- Make employee involvement your highest priority.

- Stress the fact that near miss reporting is critical to disaster prevention and use surveys to determine what percentage of your near misses are not being reported?

- Consider adoption of HRO model because prolonged success makes complacency the greatest danger.

Message to Employees

- **Every employee must be actively involved in safety**

- Rules and procedures on paper have no impact unless employees live those rules at all times.

- Managers and Supervisors must keep those who work for them out of harm's way

Employee Survey C

- Labor/Management Task Force sought employee perceptions, views and involvement thru Employee Survey

- Consultant conducted three focus groups in June with randomly selected participants from four job titles (Supervisors, Train Operators, MOW Workers and Construction Flaggers)

NYCT Steps to Improved Safety Culture

D

- Commitment at highest levels & buy-in throughout the organization

- Joint ownership/partnership

- Necessary resources identified & provided.

- Real & verifiable results & follow through

- Calibration of rules

- Testing & verification of outcomes

RESULTS

- Three years (less two days) after Marvin Franklin's death, a track supervisor was killed on the NYCT tracks. This represented the second longest period between track deaths in recorded NYCT history.

- Six years (less five days) after Marvin Franklin's death, another hourly worker was killed on the tracks at NYCT. This is by far the longest period in history between hourly worker deaths.

- **A reporting culture:** Employees are encouraged to report safety issues in a confidential manner without fear of retribution.

- **An informed culture:** Leading indicators of safety performance are collected, analyzed, and disseminated.

- **A learning culture:** As a result of safety trends or incidents, processes and practices are changed and outstanding safety issues are resolved. Employees are trained to ensure competency in their disciplines.

- **A just culture:** Employees are held accountable for reckless or deliberate actions, but they are not unduly punished for unintentional errors.

Closing

Make employee involvement your highest priority.

Perspectives on Training

Innovation, Sharing, and Partnerships

12/11/18

Janet Weisenford

Background

TCRP Research Report 199, Transit Technical Training:
 Volume 1: Guide to Applying Best Practices and Sharing Resources
 Volume 2: Guide to Overcoming Barriers to Implementing Best and Innovative Training

Project Officer: Gwen Chisholm-Smith

- **Offer some insights**
- **Stimulate some discussion**
- **Encourage sharing, collaboration, and partnering**

1. Training does not need to put you to sleep

Gaming

Figure 3: America's Army Video Game Training

Figure 4: Raytheon Patriot Missile System Video Game Training

- Similar to simulations gaming can provide a virtual hands-on environment
- Gaming adds extra motivational factors through points, missions, and other gaming elements.
- Can offer different levels of difficulty for learners
- Games range from simple to complex—Example Quizlet (quizlet.com)

2. One size doesn't fit all.

Intelligent tutoring and adaptive learning provide tailored instruction.

3. You can take it with you

Mobile Learning

Web-based training

Yours, mine and ours: Sharing, collaborating, and partnering

Exhibit 1. Graphic Overview of the Report

Successful Training Delivery

Transit Agency Level Best-Practices

Shared Model Level Best-Practices

Focus 1: Understanding of Training Needs and Learning Tendencies
- BP1: Update with learner-centered principles
- BP2: Implement training needs assessments
- BP3: Use ISDs alongside SMEs

Focus 2: Infrastructure, Equipment, & Productivity Costs
- BP4: Technology rather than infrastructure
- BP5: Use regional partnerships & shared models
- BP6: Align training schedule with workload
- BP7: Conduct periodic concentrated trainings

Focus 3: Capacity for Training and Instructor Evaluation
- BP8: Updating courses with learner-centered principles
- BP9: Use training needs assessments
- BP10: Supervisors responsible for monitoring trained behavior

Focus 4: Access to Innovative Training Technology
- BP11: Develop blended training program
- BP12: Utilize centralized transit training resources

Focus 5: Unaware of Available Shared Training Resources
- BP13: Use communication and enegagement techniques to connect users to resources

Focus 6: Training Content is Outdated
- BP14: Host should routinely update training
- BP15: Training devlivery routinely refined

Focus 7: Training Not Aligned with Needs
- BP16: Conduct needs assessment

Focus 8: Legal Risks of Shared Training
- BP17: Include legal waivers/agreements
- BP18: Develop courses on open/SCORM complicant platform
- BP19: Reimburse content developers for sharing training
- BP20: Provide instructions, guidance, and templates

Focus 9: Lack of Adequate Resources
- BP21: Generate funding through fees, costs, and grants

TCRP F-24: Overcoming Barriers to Implementing Best and Innovative Best Practices for Public Transportation's Frontline Workforce

Guidebook

February 2018

Submitted to:
Ms. Gwen Chisholm Smith, Esq
and the TCRP F-24 Project Panel

Submitted by:
ICF Incorporated, LLC
9300 Lee Highway
Fairfax, VA 22031
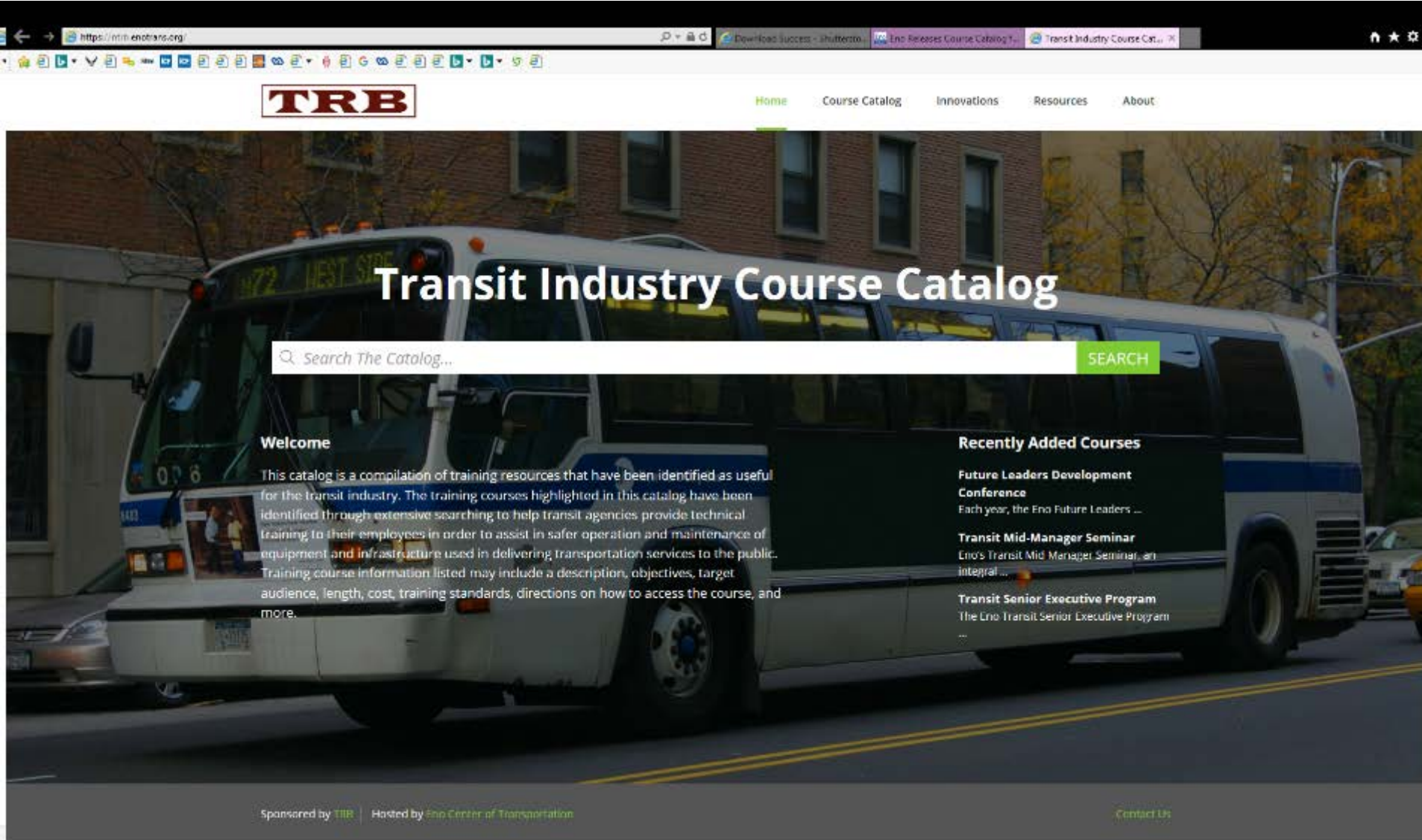
Transit Industry Catalog

Course Catalog:

Resources

This section contains various resources including tools, templates, and guides that transit agencies can use to make their training more effective. These resources are designed to follow best practices for training development and should be useful for transit agencies of all sizes and modes.

Best Practices

This section contains a number of best practices for technical and frontline transit training that have been identified and validated through interviews and surveys with transit agencies across the country. They provide valuable information on how to overcome common barriers to implementation of effective technical and frontline training.

Read more

NHI Guide

The National Highway Institute provides a number of tools to support development of Instructor-led training (ILT), Web-based training (WBT), and Web-Conference training (WCT) that meet NHI standards. As these tools could also be useful for development of public transportation training, they are linked here.

Read more

Checklists

Checklists can be used to ensure that critical tasks are completed when developing or implementing training. They

Templates

Templates can be used to develop training or perform training support tasks quickly and efficiently. They typically include

Sponsored by TRB   Hosted by Eno Center of Transportation   Contact Us

The resource section offers users tools, templates and guides that can be used to make training more effective.