You are Not Alone: Workforce Perspective from the Transportation Sector

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Jack Clark, Executive Director
Transportation Learning Center
I. About the Transportation Learning Center

II. Transit Workforce Challenge and Opportunity

III. Industry-wide Solutions
   1. Industry Training Standards
   2. National Training Consortia
   3. Registered Apprenticeship in Transit
   4. Small Operations

IV. You are not alone: Transit and Other Infrastructure Industries
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
Transit Frontline Hiring and Training Needs

Challenges with Hiring & Training

- Expansion of Services/New Service Models
- New Technologies & Automation
- Competition from Other Industries
- Aging Workforce
- Image of Industry and Jobs

Competition from Other Industries
Transit has the oldest workforce among all transportation sectors

![Graph showing median age of workers in various transportation sectors.]

Source: Bureau of Labor Statistics
126 Percent of Today’s Transit Workforce Will Have to Be Hired and Trained in the Next 10 Years; 90 percent are frontline workers

Source: TLC Analysis of BLS and NTD data.
Women under-represented, 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)

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

Source: Data Report on Transportation Workforce Needs by the U.S. Department of Education, Transportation and labor.
**African-Americans and Hispanics underrepresented in higher paid and skilled transit & transportation jobs (2)**

### 2014 Employment in Transportation Jobs by Ethnicity (Annual Averages)

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Hispanic or Latino</th>
<th>Non-Hispanic or Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft pilots</td>
<td>3%</td>
<td>97%</td>
</tr>
<tr>
<td>Aircraft mechanics</td>
<td>13%</td>
<td>87%</td>
</tr>
<tr>
<td>Bus and truck mechanics</td>
<td>16%</td>
<td>84%</td>
</tr>
<tr>
<td>Truck drivers</td>
<td>21%</td>
<td>80%</td>
</tr>
<tr>
<td>Bus drivers</td>
<td>13%</td>
<td>87%</td>
</tr>
<tr>
<td>Laborers</td>
<td>24%</td>
<td>76%</td>
</tr>
<tr>
<td>Vehicles cleaners</td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>All US Occupations</td>
<td>16%</td>
<td>84%</td>
</tr>
</tbody>
</table>

Generally Higher Wages, Skills and Career Potential

- Aircraft pilots
- Aircraft mechanics
- Bus and truck mechanics
- Truck drivers
- Bus drivers
- Laborers
- Vehicles cleaners

Generally Lower Wages, Skills and Career Potential

- All US Occupations

Source: Data Report on Transportation Workforce Needs by the U.S. Department of Education, Transportation and labor.
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.
More than one in five (22 percent) construction, transportation, and storage workers have no digital skills. Workers lacking digital skills are more prevalent among those aged 45 to 54.

Source: Digital Skills Factsheet for Construction and Transportation, National Skills Coalition
Industry-wide Solutions

- Industry Training Standards
- National Training Consortia
- Registered Apprenticeships
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
Training Consortia

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 Membership

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

Cost Sharing: 3%
Individual Agency’s Share of Cost
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.

Course 104: Introduction and Overview to APS and Batteries
Tags: rail car, overview, introduction
Course 104, Introduction and Overview to APS and Batteries is a three-module course that provides participants with an orientation to rail car APS and battery systems and prepares them to operate and maintain the APS and Battery systems in a rail car maintenance facility.

Course 204: Inspection and Maintenance of HVAC Systems
Tags: rail car, maintenance, inspection
Course 204, Inspection and Maintenance of HVAC Systems is a three-module course that provides participants with the knowledge and skills to inspect and maintain APS & Battery systems.

Module 2
Auxiliary Power Supply Systems

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.

COURSE 104: INTRODUCTION AND OVERVIEW TO APS UNITS AND BATTERIES
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
Hear from Consortium Subject Matter Experts

• https://vimeo.com/270145282
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

<table>
<thead>
<tr>
<th>Complete</th>
<th>Complete</th>
<th>Complete</th>
<th>Complete</th>
<th>Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus Maintenance Technician</td>
<td>Elevator/Escalator Technicians</td>
<td>Rail Vehicle Technicians</td>
<td>Coach Operators</td>
<td>Signals Maintainers</td>
</tr>
</tbody>
</table>
Local Implementation

- More than 40 transit agencies and their unions partnering under the national program
- Local Joint Apprenticeship and Training Committees
- Partnership with schools and workforce systems
- 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)
Registered Apprenticeship in Transit

Graduates from VTA/ATU 265
Apprenticeships for Coach Operators, Service Mechanics and Track Workers
Center Certifies BART Technical Trainers after Train-the-Trainer
Small Operators: Regional and Distance Learning

- Small urban and rural transit agencies struggle with in-house training capacity
  - No on-site trainer
  - No curriculum
  - Limited release time for training

- Models:
  - Circuit Rider (Floating Trainer)
  - Tapping into training of larger agencies in the region (SEPTA)
  - Shared training sessions
  - Instructor-led Distance Learning paired with local OJT
Potential Sources of Funding

- DOT (FTA Innovative Workforce Development)
- DOL (ETA Apprenticeship, Am Promise, etc.)
- Transit Agency Contributions
- Vendor/OEM Contributions
- State Grants (e.g. Apprenticeship Incentive)
- Other Partners (Education)
Training Pays for itself Many Times Over

Return on Training Investment Found to be 745%

<table>
<thead>
<tr>
<th>Millions of Dollars</th>
<th>Years 1 &amp; 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$0</td>
<td>$5</td>
<td>$10</td>
<td>$25</td>
</tr>
</tbody>
</table>

- Red: Training Investment
- Dark Blue: Middle Estimate on Savings from Training
WMATA Escalator Availability Improves

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

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

Source: TLC preliminary analysis based on raw data from two El/Es consortium member organizations
You are not alone
Transit and Other Infrastructure Industries

I. Similar Characteristics
   I. Public agencies started around the 70s
   II. Local – hard to outsource
   III. Rooted in and recruits from local community
   IV. High paying skilled jobs with low entry req.

II. Similar Challenges
   I. Wave of retirement, new technologies, images
   II. Need for pipeline of frontline workers & diversity
   III. Physical capital vs. Human capital
   IV. Large, medium and small operations

III. Similar Solutions and Collaboration?
Questions?

Comments?