



# **National Transportation Workforce Summit** Summary of Results

Washington, D.C.

—Framework for Action—



This important Summit, held in April 2012, brought together many conversations that have created a rich tapestry of transportation workforce development efforts across the nation and wove those efforts into a cohesive strategic framework. We called this event a “summit,” not a conference, because we wanted to encourage full attendee participation in crafting a joint action plan for coordinating workforce development activities of industry, federal, state and local transportation and education agencies, and transportation professional organizations. The Summit sought to generate broad ownership in a framework to link workforce needs to workforce development policies and programs.

The scope of the Summit included the workforce for all modes of transportation and all training sources for that workforce. It was initiated by the Council of University Transportation Centers (CUTC) in cooperation with the U.S. Department of Transportation (U.S. DOT). Building upon other national initiatives, the U.S. Departments of Education and Labor along with industry organizations and the National Science Foundation were instrumental in contributing to the success of the event. A full list of Summit sponsors is included in this report.

The theme for our Summit was “Pathways to the Future”, and was launched by an opening session featuring government and industry leaders, including the Honorable Ray LaHood, Secretary of Transportation (U.S. DOT). Secretary LaHood established a context and vision from which to begin our dialog. He was followed by Mr. Frank Stasiowski, a renowned futurist who guided those assembled to envision the changes in workforce and workplace conditions that will influence our ability to attract, develop, and retain transportation workers. Within this report-out, you will find a list of the wide array of Steering and Program Committee representatives from the education, transportation, and labor sectors who worked together to prepare the summit program..

In keeping with the spirit of an organized summit we regularly broke into smaller working groups to develop this Framework for Action. During those breakout sessions, professional facilitators helped us move through a process to:

- Describe the significant workforce challenges;
- Form the strategic goals and outcomes to address those challenges;
- Determine the necessary action strategies (long and short-term) to achieve those outcomes; and
- Identify who should implement the strategies and how results could be measured

Those discussions built off of the many examples of transportation workforce development efforts on display through the Showcase Exhibits. Much of the background for the Summit dialog was captured in the series of papers that were submitted in advance of the event, now available on the Summit’s website.

The final session of our Summit, open to the public, provided an interactive forum to clarify, enhance, and prioritize the Summit recommendations for the strategic framework to emerge, along with key administrative and legislative actions required at federal and state levels to institutionalize effective workforce policies and programs.

On behalf of the Summit Sponsors and members of the Planning and Steering Committees, we hope the connections made at the Summit will flourish and that the findings, recommendations and action plan in this Framework for Action will continue to advance the nation’s workforce development endeavors.



**Teresa M. Adams**  
Summit Co-Chair  
CUTC President  
University of Wisconsin-Madison



**John Collura**  
Summit Co-Chair  
CUTC Executive Committee  
University of Massachusetts- Amherst

# CONTENTS

<b>4</b>	<b>Overview</b>
<b>5</b>	<b>Transportation Workforce Challenges and Opportunities</b>
<b>6</b>	<b>Transportation Workforce Stakeholders and their Roles</b>
<b>8</b>	<b>Opening the Conversation</b>
8	The Changing Workforce in a Changing World: Industry Leaders Provide Insight
9	Workforce Development: Identifying Needs, Opportunities and Actions
<b>10</b>	<b>Framework For Action</b>
<b>10</b>	<b>Building and Raising Career Awareness</b>
10	Reaching out to the Future Transportation Workforce
11	Increasing Interest and Training for 2 <sup>nd</sup> Careers in Transportation
12	Increasing Interest in Public Transit and Railroad Occupations
13	Improving Preparation for Public Transit and Railroad Occupations
<b>14</b>	<b>Transitioning from the Classroom to the Workplace</b>
14	Matching Curriculum with Transportation Industry Needs
15	Increasing Transportation Degree, Credit, and Skill Portability
16	Expanding Transportation Workforce Access to Post-Secondary Education
17	Improving Student Readiness for the Transportation Workforce
<b>18</b>	<b>Continuing Education and Transportation Workforce Retention</b>
18	Increasing Transportation Workforce Retention in Underserved Populations
19	Accommodating an Aging and Multi-Generational Transportation Workforce
19	Increasing Resiliency of the Transportation Workforce
20	Adapting to the Constant Technological Advances in the Transportation Industry
21	Increasing Transportation Workforce Data Reliability and Accessibility
<b>21</b>	<b>Next Steps: Putting the Framework Into Action</b>

“We need to make sure there are people who follow in our footsteps.”

—The Honorable Ray LaHood, Secretary of Transportation, U.S. Department of Transportation

## Summit Organizers

### Summit Co-chairs

**Teresa Adams**, University of Wisconsin-Madison  
**John Collura**, University of Massachusetts-Amherst

### Summit Session Chairs

**Diana Long**, Marshall University  
**Clark Martin**, U.S. DOT, FHWA  
**Lydia Mercado**, U.S. DOT, RITA  
**Shashi Nambisan**, Iowa State University  
**Tom O'Brien**, California State University, Long Beach  
**Leslie Washburn**, University of Florida

### Summit Steering and Planning Committee

**Gina Baas**, University of Minnesota  
**Christine Beauvais**, AASHTO  
**Greg Benz**, TRB Committee on Training and Education  
**Jason Bittner**, University of South Florida  
**Holly DiGangi**, ARTBA  
**Dock Burke**, Texas A&M University  
**Jeffrey Bryan**, U.S. DOT, RITA  
**Billy Connor**, University of Alaska  
**Michelle Farr**, University of Massachusetts  
**Barbara Gannon**, ENO Foundation  
**Gen Giuliano**, University of Southern California  
**Shauna Hallmark**, Iowa State University  
**Bryna Helfer**, U.S. DOT, OST  
**Scott Hess**, U.S. Department of Education  
**Betty Jackson**, U.S. DOT, FTA  
**Scott Janowiak**, University of Wisconsin-Madison  
**Jon Makler**, Portland State University  
**Donna Maurillo**, San Jose State University  
**Glenn McRae**, University of Vermont  
**Martin Pietrucha**, Pennsylvania State University  
**Alison Premo Black**, ARTBA  
**Joseph Niegowski**, APTA  
**Robert Plymale**, Marshall University  
**Scott Rutherford**, University of Washington  
**Debora Rosen**, University of Rhode Island  
**Gerhard Salinger**, National Science Foundation

### Summit Report Compilation

**Jesse Cohn**, VOLPE Center  
**Glenn McRae**, University of Vermont  
**Teresa Adams**, University of Wisconsin-Madison  
**Jeffrey Bryan**, VOLPE Center

### Summit Notetakers

**Nicholas Leggett**, University of Vermont  
**Leticia Mata**, APTA  
**Neil Nachbar**, University of Rhode Island  
**Santiago Navarro**, RITA  
**Krystal Oldread**, University of Massachusetts-Amherst  
**Daniel Sithole**, University of Vermont  
**Ernie Wittwer**, University of Wisconsin-Madison

## Summit Sponsors

### Platinum Level

Federal Highway Administration (FHWA)  
Research & Innovative Technology Administration (RITA)

### Gold Level

Center for Transportation Studies, University of Minnesota  
METRANS, University of Southern California & California State University  
Midwest Transportation Consortium, Iowa State University  
National Center for Freight & Infrastructure Research & Education, University of Wisconsin-Madison  
Nick J. Rahall, II Appalachian Transportation Institute, Marshall University  
Southeastern Transportation Center, University of Tennessee  
Thomas D. Larson Pennsylvania Transportation Institute, Pennsylvania State University  
University of Florida Transportation Research Center  
University of Massachusetts Transportation Center  
University of Rhode Island Transportation Center

### Silver Level

Alaska University Transportation Center, University of Alaska Fairbanks  
American Road & Transportation Builders Association (ARTBA)  
American Public Transportation Association (APTA)  
Center for Transportation Research, University of Texas-Austin  
Mineta Transportation Institute, San Jose University  
Mountain-Plains Consortium, North Dakota State University  
National Center for Intermodal Transportation, University of Denver  
Oklahoma State University, Oklahoma Transportation Center  
Oregon Transportation Research & Education Consortium, Portland State University  
Southwest Region University Transportation Center, Texas A&M University  
UVM Transportation Research Center, University of Vermont  
Western Transportation Institute, Montana State University

### Bronze Level

American Association of State Highway & Transportation Officials (AASHTO)  
Great Lakes Maritime Research Institute

### Grant Assistance

National Science Foundation

# OVERVIEW

The National Transportation Workforce Summit (Summit), held in Washington, D.C. on April 24-26, 2012, brought together stakeholders in transportation workforce development from across the nation to develop a cohesive strategic framework for addressing the challenges of recruiting, training and retaining the current and future transportation workforce. The Summit included workforce professionals from all modes of transportation as well as professionals representing the variety of training sources for the workforce. The Council of University Transportation Centers (CUTC) initiated the Summit in cooperation with the U. S. Department of Transportation (U.S. DOT). The U.S. Department of Education (U.S. ED) and the U.S. Department of Labor (U.S. DOL), industry organizations and the National Science Foundation (NSF) also played significant roles in developing the event.

The theme for the Summit was “Pathways to the Future,” and the Summit’s three participatory sessions addressed career awareness, the roles of post-secondary institutions and the transition from education to the workplace, and professional and continuing education of the workforce. In total, these sessions sought to answer the question –how can we better recruit, train, and retain workers in transportation? The Summit focused on partnerships and increased cross-disciplinary coordination, exemplified by the opening discussion between Assistant Secretaries from the Departments of Transportation, Education, and Labor. The Assistant Secretaries pledged not only commitment to improving the recruitment, training, and retention of the transportation workforce, but also to employing a collaborative approach to reaching this goal.

The outcome of the Summit is a collaboratively-developed Framework for Action, which aligns the workforce development activities of Federal, State and local transportation, educational institutions, industry employers, and transportation professional organizations to link workforce needs to workforce development policies and programs. This Framework for Action identifies some of the challenges facing transportation today and presents a series of strategies and action steps to overcome these obstacles. A sustainable and effective plan of action moving forward will focus on the collaborative and inter-linked initiatives of private and public entities across disciplines, taking advantage of the resources that universities, community colleges and public education have to offer, along with efforts by key stakeholders such as labor unions and industry groups.

## Transportation Workforce Challenges and Opportunities

Our nation's transportation system depends on a skilled and qualified workforce, yet the transportation industry is experiencing a growing number of challenges related to workforce recruitment, training, and retention. The transportation workforce requires a broader range of skills than in the past, as agency missions are changing and expanding and as new technologies continue to emerge.

National Cooperative Highway Research Program (NCHRP) Report 693 identifies four critical issues affecting transportation workforce recruitment, training and retention:

**Demographic Changes** – “Baby Boomer” retirements are a major challenge facing transportation systems, as 50 percent of the transportation workforce will be eligible to retire in the next ten years. Often, long-time employees are the only ones who possess the specialized knowledge and historical perspective critical to the efficient operation of transportation organizations. The loss of these highly skilled personnel is likely to result in skill gaps needed to perform mission critical tasks.

The impending influx of younger workers into leadership positions presents another set of challenges. Younger workers have come to expect more support from their employers in terms of work-life balance and flexible work arrangements. These differences may result in the need for different management approaches in order to keep younger employees engaged and to retain them in the workforce.

**Career Awareness and Training** – Some transportation workers learn about career opportunities in transportation while enrolled in school, in both the K-12 school system and in community colleges and universities. Yet students often make decisions about which careers they will pursue before they learn about transportation, so they are neither considering nor preparing for the transportation field.

Much attention has been paid to the need for training within transportation as a whole, yet there are competencies for which training still tends to be nonexistent or insufficient. Some training offered to students is too broad, causing entry-level applicants to lack key, specialized transportation skills.

**New Technologies** – Technological innovations play an important role in how transportation agencies accomplish their mission and in the evolution of careers. For example, Intelligent Transportation Systems (ITS), which involve the convergence of communication, computing, sensing, positioning and control technologies, influence not only what transportation agencies do, but also how they plan and conduct projects – in turn influencing the skills necessary to fill transportation positions.

Increased reliance on technology affects the transportation workforce in multiple and sometimes contradictory ways. For example, utilizing state-of-the-art tools to streamline work processes may help to retain employees as certain work tasks become easier. Yet as more complex operating systems gain momentum, more technologically-savvy systems operators and managers are needed, and the need for traditional technicians declines.

**Demand on Transportation Agencies** – The demand on transportation agencies has been dramatically increasing over the past few decades, highlighting the need for successful recruitment, development, and retention practices. For example, within State DOTs, not only is new construction a priority, but there is now also a focus on maintaining and operating systems more efficiently. These broader responsibilities require a workforce capable of addressing a variety of issues. Thus, it is critical for transportation agencies to recruit and retain a workforce with a wider range of technical and non-technical experience.

Only by addressing these overarching themes can the transportation industry build and maintain a robust workforce.

“Who will replace current workers? How can we leave the industry in good hands?”

—Julie Cunningham, Council of Minority Transportation Officials (COMTO)

“The skills and methods of yesterday are not enough for the workplace of the future.”

—Patrick Natale, American Society of Civil Engineers (ASCE)

### Transportation Workforce Stakeholders and their Roles

Successfully recruiting, developing, and retaining the new and existing transportation workforce requires a collective effort involving transportation agencies, the Federal and State government, the private sector, and a range of educational institutions. Working both individually and in partnerships, each of these stakeholders plays a role in providing for the future of the transportation workforce.

The table below identifies the range of transportation workforce stakeholders and the role that each will play in attracting, training, and maintaining the workforce.

“These challenges are not new. We’ve heard them before. We have to continue pressing to address them.”

—Shashi Nambisan, Iowa State University

Stakeholder	Role in the Transportation Workforce
<b>Industry and Labor</b>	
<b>Employers:</b> e.g., Trucking Companies, Railroads, Transit and Port Authorities, Aviation, Maritime, Transportation Construction, Engineering, Design	<ul style="list-style-type: none"><li>• Raise awareness about transportation careers</li><li>• Promote and define careers and career opportunities</li><li>• Recruit, employ, and train workers</li><li>• Provide on-the-job training and continuing education opportunities</li><li>• Provide internships and apprenticeship opportunities</li></ul>
<b>Transportation Trade and Professional Organizations</b>	<ul style="list-style-type: none"><li>• Develop and disseminate career pathways materials and programs</li><li>• Conduct workforce studies and initiatives</li><li>• Offer continuing education, certifications, licensing, etc.</li><li>• Advocate for Federal and State policies and resources to support workforce development</li><li>• Partner with education and workforce government agencies, and organized labor, to improve recruitment and retention</li><li>• Provide networking, internships and mentoring opportunities within the trade or interest group</li></ul>
<b>Organized Labor Organizations</b>	<ul style="list-style-type: none"><li>• Provide apprenticeship, training, education and certification programs</li><li>• Advocate for Federal and State policies and resources to support workforce development</li><li>• Ensure transportation workplaces are safe and treat employees fairly and with respect</li><li>• Showcase careers and job value</li></ul>
<b>State Workforce Organizations:</b> e.g., Workforce Investment Boards, Workforce Development Councils, National Association of Workforce Boards	<ul style="list-style-type: none"><li>• Direct Federal, State, and local funding to workforce development programs</li><li>• Conduct and publish research on the needs of the regional transportation economy</li><li>• Oversee one-stop career centers, providing employment information and training opportunities</li></ul>
<b>Government</b>	
<b>U.S. Department of Transportation</b>	<ul style="list-style-type: none"><li>• Raise awareness about transportation careers</li><li>• Support workforce development programs and research</li><li>• Promote on-the-job training and continuing education opportunities</li><li>• Develop Federal guidelines for job certifications</li></ul>
<b>U.S. Department of Education</b>	<ul style="list-style-type: none"><li>• Promote alignment between career technical education and labor market needs to equip students with 21st century skills and prepare for in-demand occupations in high-growth industry sectors</li><li>• Ensure that regional and local educational institutions meet education and career needs</li><li>• Ensure accountability of educational institutions</li></ul>

## U.S. Department of Labor

- Foster, promote, and develop the welfare of the wage earners, job seekers, and retirees of the United States; improve working conditions; advance opportunities for profitable employment; and assure work-related benefits and rights.
- Improve job matching to meet the needs of both job seekers and job creators
- Administer effective programs to increase worker skills through registered apprenticeships and other means, employment opportunities and business prosperity

## State Department of Transportation

- Attract, recruit, employ, retain and train State DOT workers
- Implement mentoring programs for new workers and emerging leaders
- Create internships and apprenticeship programs in all divisions
- Support broad partnerships with education and workforce organizations to develop programs to prepare the next generation of workers
- Develop human capital and knowledge capture plans

## State Departments of Education

- Ensure that State and local educational institutions meet education and career needs
- Ensure accountability of State and Local educational institutions

## State Departments of Labor

- Administer effective programs to increase worker employment opportunities and business prosperity

## Public/Quasi-Public Transportation Agencies, Authorities and Corporations: e.g., Transit Agencies, port authorities, airport authorities, AMTRAK

- Attract, recruit, retain, train transportation workers
- Implement mentoring programs for new workers and emerging leaders
- Create internships for students

## Local Government: e.g. Cities, towns, counties, tribes and tribal areas

- Attract, recruit, retain, train local public sector transportation workers
- Implement mentoring programs for new workers and emerging leaders
- Create internships for students

## Education and Research

### Transportation Research Community: e.g., Universities, non-profit organizations, Transportation Research Board

- Analyze impact of new technologies on workforce and develop training curriculum
- Analyze and document best practices for recruiting, training and retaining a transportation workforce
- Integrate and coordinate research with academic education, training and technology transfer

### Post-Secondary Schooling Accrediting and Member Organizations

- Accredite institutions that confer degrees and educate students in various transportation fields
- Serve as national information resources
- Facilitate collaboration in various post-secondary transportation fields
- Offer leadership and career development opportunities

### Universities

- Prepare students for engineering, finance, planning, marketing, logistics, communications or other high-skill occupations in the transportation workforce
- Provide graduate education in technical fields and prepare future leaders in management and administration

### Community Colleges

- Provide binding certifications and degrees for adult learners to enter the transportation field
- Offer both technical career skill degrees as well as business and management skill degrees relevant to the transportation field
- Prepare students for transition to a four-year institution
- Prepare students for the workforce

### Technical Colleges and Training Institutes

- Prepare students for work in technical and mechanical fields
- Provide specialized certifications and training for adult learners

### Local Technical Assistance Programs

- Train municipal transportation workers to improve skills and knowledge needed to continually increase job performance
- Provide an information clearinghouse and new technology updates to support an environment of continuous learning for municipalities

### High School Career and Technical Education Centers

- Prepare students for work in operations and maintenance in technical and mechanical fields
- Provide continuing education and job bringing opportunities for adult learners

### K-12 Municipal School Systems

- Prepare students for post-secondary education
- Inspire and help students explore careers in the transportation field
- Prepare students with jobs readiness skills and basic education for entry-level workforce

“As long as people and goods need to get from point ‘a’ to point ‘b,’ transportation professionals will always be in demand.”

—Greg Winfree, U.S. DOT

### Opening the Conversation

The Summit’s opening sessions featured government and industry leaders, including the Secretary of Transportation, the Honorable Ray LaHood, who established a context and vision for the dialog. These sessions stressed the importance of developing a qualified transportation workforce. The focus was on the need for collaboration as well as adaptation to 21st century technology and customized approaches to meet specific needs. These common threads ran throughout the sessions as speakers highlighted both the challenges and opportunities facing the current transportation industry and workforce.

#### Assistant Secretaries for Departments of Transportation, Education and Labor



**Polly Trottenberg**, assistant secretary for Transportation Policy, U.S. DOT



**Brenda Dann-Messier**, assistant secretary for Vocational and Adult Education, U.S. ED



**Jane Oates**, assistant secretary of Employment and Training, U.S. DOL

The U.S. DOT, U.S. ED, and U.S. DOL each play a role in building the transportation workforce. While each Department has unique responsibilities related to the transportation workforce, these responsibilities intersect. For example, all three Departments educate and train prospective and incumbent work-

ers and help them identify career pathways within the transportation field. The Assistant Secretaries emphasized these intersections throughout their discussion, and reinforced the notion that partnering yields greater results than disparate individual efforts. They provided examples of partnerships and committed themselves to furthering these efforts.

In addition to partnering within government, the Assistant Secretaries underscored the importance of communicating with industry employers and the workers themselves. The discussion highlighted some major challenges facing the transportation workforce today: the aging transportation workforce, the small hiring pool of potential workers, and the rapidly changing skill requirements of the

field. Efforts to reach the next generation workforce require new approaches, as do efforts to train them. The Assistant Secretaries emphasized the need to not only teach up-to-date practices and technologies, but also instill the skills necessary for acclimating to change. The workforce of the future will look different from today, especially in its need to quickly adapt and continually be learning. Effectively preparing the workforce will take a concerted and unified effort on the part of government, private industry, and the broad educational and nonprofit workforce development field.

### The Changing Workforce in a Changing World: Industry Leaders Provide Insight

Leaders and CEOs from various transportation industries revealed challenges and opportunities facing their industry and the specific organizations they represent. They discussed the two poles of the transportation workforce: the technicians and operators who are in the field (estimated to be 80 percent of transportation workers), and the engineers and managers (estimated to be 20 percent). The industry faces challenges in recruiting interested, qualified workers for all levels of occupations. A single approach to recruitment, training and retention is not sufficient, as the transportation workforce requires a range of skills and abilities. For example, change management, interpersonal and collaboration skills are a higher priority for workers in supervisory roles, while specific technical training is necessary for specialty occupations. Similarly, tactics for attracting single parents, immigrants, and the Generation Y workforce to transportation careers may vary from traditional recruitment campaigns.

Ed Hamberger’s description of the freight railroad industry exemplified many of the transportation workforce challenges expressed by the representatives from several modes. The freight railroad industry workforce is older than other industries, with 23 percent of workers between the ages of 55 and 64 (whereas the national average is 15 percent). Last year, the freight railroad industry struggled to fill its 15,000 open positions, yet found very qualified applicants in veterans. The industry identifies veterans as a promising potential workforce for their work ethic and ability to succeed in demanding and exhausting conditions.

“Transportation is the economic backbone of our economy.”

—Edward Wytkind, AFL-CIO

Similarly, Pete Ruane from the ARTBA described the challenges of recruiting enough young, qualified workers to the transportation construction industry, and Marcia Ferranto from WTS revealed the struggles of not only recruiting, but retaining women in the transportation field. Several speakers identified a lack of awareness and effective branding as barriers to recruiting a young, diverse transportation workforce. John Horsley of AASHTO echoed the challenges presented by industry leaders, citing similar struggles in employing qualified workers for State departments of transportation (DOTs) nationwide.

The industry is scrambling to respond to the aging workforce, the small pool of potential qualified applicants, and the attrition of their current workers. Although employees in freight rail are eligible for full retirement benefits after 30 years of service, few workers receive these benefits. The average service in the industry is only 14 years. The unconventional and demanding schedules of many transportation positions prevent workers from choosing to enter or stay in this field.

### Industry Leaders



**Pamela Boswell,**  
vice president, program  
management education  
services, American  
Public Transportation  
Association (APTA)



**Julie Cunningham,**  
president & CEO,  
Conference of Minority  
Transportation Officials  
(COMTO)



**Marcia Ferranto,**  
president & CEO,  
Women's Transporta-  
tion Seminar (WTS)



**Ed Hamberger,**  
president & CEO,  
Association of  
American Railroads



**John Horsley,**  
executive director,  
American Association  
of State Highway &  
Transportation  
Officials (AASHTO)



**Patrick Natale,**  
executive director,  
chief staff officer  
& secretary, ASCE



**T. Peter Ruane,**  
president & CEO,  
American Road &  
Transportation Builders  
Association (ARTBA)



**Edward Wytkind,**  
president  
transportation trades  
department, AFL-CIO

### Workforce Development: Identifying Needs, Opportunities and Actions



**The Honorable  
Ray LaHood,**  
secretary of  
transportation,  
U.S. DOT

Secretary LaHood's comments echoed and reinforced the focus on partnerships that resonated during the previous discussions. He placed particular emphasis on the importance of mentoring – stating that there is a shortage of transportation workforce mentors. He encouraged the Summit participants to become mentors within their industries, organizations and communities. Mentors who work individually with students and new employees not only teach them valuable skills, but also welcome them into the industry, instilling a level of camaraderie and

commitment. The Secretary linked mentoring to networking and to the overall value of creating partnerships and utilizing opportunities for information sharing within the transportation community. This discussion of participation and communication exemplified the Summit's emphasis that all stakeholders have a role to play in improving the transportation workforce.

“Rather than developing a course for railroads or any of the modes... we can take a math problem and teach people mathematics in the context of a transportation problem. And then do a bit more exploration about transportation so students get the idea.”

—Gerhard Salinger, National Science Foundation

# FRAMEWORK FOR ACTION

The Framework for Action is the cumulative product of the series of breakout working sessions throughout the Summit. These sessions focused on three stages of workforce development: career awareness, the transition from post-secondary education to the workplace, and retention and continuing education. Each breakout featured presentations by transportation professionals currently implementing programs pertaining to the topic area. The case studies and best practices laid the groundwork for determining the overarching goals for improving workforce development and addressing the challenges that impede achieving these goals. In the discussions that followed the presentations, Summit participants agreed upon strategies, action steps, and implementing agencies for addressing and overcoming the identified challenges.

## Building and Raising Career Awareness

The transportation field struggles to raise awareness and interest in transportation-related occupations among entry-level and mid-career workers. Few school systems incorporate transportation specifically into their primary and secondary career awareness activities. Many students enter college and the workforce unaware of this potential career pathway. But awareness is not the only issue – raising interest in the field is equally important. Throughout the Summit, industry, education, workforce and labor leaders stressed the need to better market transportation workforce opportunities. Adults choosing career paths should be aware that transportation occupations reach across multiple disciplines and require a broad range of schooling and technical skills. Through early, persistent, and accurate outreach efforts, the transportation industry can build awareness and interest for the career paths in this field.

The Summit also helped industry and education leaders recognize communication gaps that impede effective partnering and collaboration strategies to raise awareness and interest in transportation careers.

## Reaching out to the Future Transportation Workforce

To increase the number of high school and college graduates who pursue transportation careers, industry and education (primary, secondary, and post-secondary) must partner to raise awareness about opportunities in the field. Career technical education (CTE)

and science, technology, engineering and mathematics (STEM) education both provide necessary skills for entering the transportation workforce, yet these initiatives are not specifically tailored for the transportation industry and its related fields.

Increasing career awareness among the next generation requires a comprehensive approach, from industry partners to parents and neighborhood leaders. Developing tools to educate parents, teachers and school counselors about transportation career opportunities allows children and young adults to learn about transportation in both the classroom and at home. Summit participants emphasized the need to expose students to transportation early and often, by making it applicable to coursework at hand.

In addition to expanding the number and range of conversations about transportation in the classroom, it can be beneficial for teachers and leadership in the municipal, military, private, parochial and alternative school systems to have access to examples of transportation curricula and extracurricular transportation activities.

**“There are some very real institution and financial constraints facing higher education, and community colleges in particular.”**

—Tom O'Brien, California State University, Long Beach

## National Career Clusters Framework

The National Association of State Directors of Career Technical Education (NASDCTEc) National Career Clusters Framework provides a structure for delivering quality CTE programs through comprehensive programs. There are 16 Career Clusters, representing more than 79 Career Pathways. The Transportation, Distribution and Logistics Career Cluster prepares students for positions related to the planning and movement of people and goods by all modes, as well as positions in related technical support services, such as transportation infrastructure planning, logistics services, mobile equipment and facility maintenance.

## Goal: Reaching out to the Future Transportation Workforce

### Challenge

- Lack of awareness of transportation career opportunities
- Difficulty of integrating transportation content into existing school curricula and programs
- Inconsistent efforts nationwide to increase awareness
- Lack of a connection between teachers and industry

### Strategy

- Coordinate efforts at the State or regional level
- Identify and work with champions within the school to introduce programs
- Build a centralized clearinghouse of K-12 transportation awareness and education efforts
- Standardize the career pathway, beginning with elementary school students
- Focus transportation curriculum on local industries and opportunities
- Raise awareness beyond the classroom

### Action Item

- Build on existing outreach programs, activities and publications
- Develop tools to educate parents, teachers and school counselors about the industry
- Create a web portal identifying educational opportunities, curricular and extracurricular transportation activities, industry internships, and career profiles
- Address transportation opportunities in STEM courses beginning in elementary school
- Work with parents, politicians and neighborhoods to reinforce the importance and relevance of transportation to youth

### Implementation Group

- State DOTs
- State ED
- K-12 municipal school system
- Teachers, school counselors
- Industry
- Transportation trade organizations
- Organized labor

## Increasing Interest and Training for 2<sup>nd</sup> Careers in Transportation

As a result of the current economic climate, today's workforce experiences a high degree of occupational mobility. The transportation industry seeks to capitalize on mid-career workers looking for new career opportunities, but this population often presents challenges to workforce recruitment and training. Second-career applicants possess a range of prior education and experience and may have expectations and requirements for mid-level salary positions.

However, these applicants often do not have the transportation skills expected of a mid-career employee already in this industry.

Industry can stem these challenges by offering paid apprenticeships or internships to those second-career applicants who lack the experience or skills necessary for a traditional entry- or mid-level transportation job. In addition, industry can identify and market positions with broad, transferable skill requirements as well as those with a favorable work-life balance.

## Goal: Increasing Interest and Training for 2<sup>nd</sup> Careers in Transportation

### Challenge

- Lack of awareness of transportation career opportunities
- Inconsistency of prior education, experience and skills of potential workers
- Workers with families require mid-level salaries and healthy work-life balance

### Strategy

- Build upon best practices to develop a national program model to attract this cohort through industry partnerships
- Target non-traditional groups, including veterans, dislocated, single parents, part-time workers and job sharers

### Action Item

- Offer paid internships to mid-career workers
- Match military occupations to similar transportation occupations; enable direct certification based on military experience
- Identify and market positions with broad, transferable skill requirements
- Identify and market positions with favorable work-life balance
- Create commitment programs to train unskilled workers in return for years of service

### Implementation Group

- Employers
- Organized labor organizations
- U.S. Department of Veteran Affairs
- U.S. DOT
- U.S. DOL
- U.S. Department of Defense

### Increasing Interest in Public Transit and Railroad Occupations

Throughout the Summit, public transit and rail industry professionals identified unique goals and challenges related to their specific sectors of transportation. They attributed the difficulties in increasing interest to a misperception of their industries as antiquated and limited in opportunities. In addition, the demanding schedules of freight rail workers pose an additional challenge to recruiting workers.

To attract today's entry-level workforce, rail and public transit can rebrand themselves through a more positive, accurate image of their industries. They can address the sustainability and livability components of public transportation and freight in order to appeal to the more environmentally-conscious younger generation. This rebranding, alongside increased field trips and internships offering real-life experiences in the transportation industry will stem the false perception of the field.

“How do we position public transportation as an employer of choice?”

—Pamela Boswell, APTA

## Goal: Increasing Interest in Public Transit and Railroad Occupations

### Challenge

- Perception of rail and transit career options as antiquated and limited
- Lack of interest and worker attrition as a result of demanding freight schedule
- Rail companies often lack a vibrant internet presence

### Strategy

- Build a positive, accurate brand for rail and transit
- Address sustainability and livability of these industries to attract youth
- Create commitment programs
- Increase online outreach

### Action Item

- Create student-led competitions to improve rail image
- Develop and build upon existing partnerships between education and industry leaders
- Offer field trips and internships to increase exposure of these fields to students
- Offer incentives for long-term employees
- Post job descriptions and applications online

### Implementation Group

- Rail and transit employers
- K-12 school systems
- Transportation trade organizations
- Organized labor organizations

### Improving Preparation for Public Transit and Railroad Occupations

Transit and rail also face barriers in employing a qualified workforce. Rail engineering is a small academic field with few experts, providing limited opportunities for students unless they specifically seek it out. Secondary and post-secondary institutions can expand exposure through rail-related coursework in introductory-level engineering courses as well as through increased course offerings related to transportation and rail engineering. Industry can address this gap from the other end, developing on-the-job training curricula to prepare new hires for positions in this field.

## Goal: Increasing Preparation for Public Transit and Railroad Occupations

### Challenge

- Misperceptions of qualifications needed to participate in these industries
- Few professors and staff prepared to teach rail engineering

### Strategy

- Expand exposure through increased formal education offerings
- Increased communication between industry and education

### Action Item

- Develop an on-the-job training curriculum to address the gap in transportation-based education offerings
- Create an industry-educator forum at the local or State Level to address workforce needs

### Implementation Group

- Rail and transit employers
- Workforce investment boards
- AACC
- State community college organizations
- Community colleges
- Universities
- CUTC
- K-12 school systems
- Transportation trade organizations

### Railroad Engineering Education Symposium

The American Railway Engineering and Maintenance-of-Way Association, a railway professional organization, developed the Railway Engineering Education Symposium (REES). REES is an annual two-day conference to foster interest among university faculty in railway engineering and to encourage and support adding railway engineering content to current engineering courses and curricula.

### Transitioning from the Classroom to the Workplace

The market for traditional educational services at colleges and universities is changing, and this affects both the schools themselves as well as their partners in industry and government. By 2018, 49 percent of all job openings will require some post-secondary education, ranging from a few courses at a community college to master's degrees. Transportation industry careers not only require workers with various levels of education, but also workers with a broad range of competencies and skills.

### Matching Curriculum with Transportation Industry Needs

In order to improve student preparation for the transportation workforce, post-secondary curricula must teach the skills required for entry-level transportation industry positions. There needs to be an increased learning-labor exchange, in which industry informs educational institutions of the competencies required to fill their positions, and then educational institutions adapt, if possible, to meet those industry needs. While universities and community colleges can provide the brunt of the workforce education, industry should identify which specific skills should be taught through on-the-job training, rather than in the classroom.

While the learning-labor exchange is simple in concept, there are challenges to matching post-secondary coursework to transportation industry needs. Community colleges and universities cannot quickly adapt to changing industry requirements, as they often face

financial and institutional barriers. To stem colleges' lack of nimbleness, industry can regularly update colleges on the skills and abilities required to fill industry positions. While universities may still lag a bit, regular updates ensure that students' coursework does not fall too far behind industry requirements.

Collaboration and information sharing can assist in the process – as efforts in curriculum matching do not need to be completed between each college and industry partner. Rather, it would be effective to conduct transportation workforce needs analysis to determine education priorities at the regional level. Similarly, sharing local examples of partnership models and institutional arrangements through a best practices clearinghouse can provide opportunities for small community colleges and universities to react to changing transportation needs without significant investment or duplicated efforts.

**“The participants of this Summit have formed a unique new community.”**

—Teresa Adams, University of Wisconsin, Madison

## Goal: Matching Curriculum with Transportation Industry Needs

### Challenge

- Inability of education institutions to respond to industry needs due to financial and institutional constraints
- Lack of nimbleness to address constantly changing technology and skills needs in industry

### Strategy

- Increase communication and coordination between community college and four-year programs and the industry
- Promote and create learning-labor exchanges
- Identify and regularly update industry needs, including those that may be met by on-the-job training

### Action Item

- Conduct transportation needs analysis to develop curricular and program priorities at the regional level
- Seek investment from industry and government to fund programs that reward collaboration along the pathway of CTE from post-secondary to employer
- Leverage existing curriculum databases to establish a national Best Practices Clearinghouse (including institutional arrangements and both financial and partnership models) that provides community colleges with more tools to respond to regional needs

### Implementation Group

- CUTC
- Universities
- AACC
- Community colleges
- Accrediting organizations
- NASDCTEc
- Transportation trade organizations

## Southern California Regional Transit Training Consortium

The Southern California Regional Transit Training Consortium (SCR TTC), comprised of transit systems, community colleges, and other affiliates, is a training resource network focused on the development and employment of the transit industry's workforce. SCR TTC provides industry-driven, competency-based courses to ensure that new and incumbent workers are proficient in the standards, practices and procedures of the transit industry. The organization is funded through membership fees, Federal grant funding, and private industry partnerships.

### Increasing Transportation Degree, Credit, and Skill Portability

Some post-secondary students in transportation fields transfer among different community colleges and universities, and some transfer from a community college to a four-year university. Often times the credits and coursework completed at the student's previous institution cannot be used towards a degree at their current school. This can drastically increase the cost and time required to earn a transportation degree.

To address this, colleges and industries can determine student's competencies through evaluating their skills and abilities rather than focusing on the specific courses completed, credits earned, or certificates received. Identifying core competencies required for transportation careers also allows industry to recruit capable candidates based on skill rather than degree. In addition, post-secondary educational institutions can standardize their definitions of associate degree, certificate and certification within the transportation field. Standardizing requirements will allow students to work through the career pipeline without a significant duplication of efforts.

### Credentials That Work

Credentials that Work (CTW), a program led by Jobs for the Future, utilizes real-time labor market data to better align education and training programs with needs of regional economies. CTW's real-time data helps to improve the understanding of hiring trends and employer demand for specific certifications and skills by drawing upon current information and consistent signals from the labor market.

## Goal: Increasing Transportation Degree, Credit and Skill Portability

### Challenge

- Difficulty in transferring credits between community colleges and from two-year to four-year institutions

### Strategy

- Evaluate competencies based on skills and abilities rather than on degrees and certificates
- Standardize definitions of associate degree, certificate, and certification within the industry

### Action Item

- Work with certifying groups to reword requirements so that students can transition from State-to-State or up the career pipeline without duplicating efforts
- Industry groups, in collaboration with the Departments of Labor, Education, and Transportation, cooperatively develop a list of core competencies for transportation careers

### Implementation Group

- NASDCTec
- CUTC
- AACC
- Accrediting organizations
- Employers
- U.S. DOL
- U.S. ED
- U.S. DOT

## Expanding Transportation Workforce Access to Post-Secondary Education

Students in all disciplines face barriers to post-secondary education, due to a lack of funding or time. Often students confronting these obstacles are unaware of the funding sources available to them. To overcome this, community colleges and universities can better compile and share information on financing opportunities for students. Yet even when funding is available for students, it is many times restricted solely to matriculating programs rather than being available for certificate or certification coursework. Working with State and Federal sources of education funding to include

non-matriculating programs could increase access to training and education.

In addition, universities can help expand funding options for transportation students through coordinating with industry employers, workforce investment boards and nonprofit organizations to design funding programs and scholarships exclusively for transportation students. To overcome time-related barriers, industry and educational institutions can coordinate to implement complementary course schedule and work schedules.

### Goal: Expanding Transportation Workforce Access to Post-Secondary Education

#### Challenge

- Lack of awareness of potential funding sources for post-secondary education
- Strict funding guidelines often preclude non-matriculated programs
- Difficult to work and be enrolled simultaneously

#### Strategy

- More flexible funding from State and Federal sources to cover non-matriculated programs
- Streamlined information on financing opportunities
- Increase communication between post-secondary institutions, social service agencies and industry

#### Action Item

- Address funding flexibility in the Workforce Investment Act and the Servicemen's Readjustment Act (G.I. Bill)
- Develop funding programs through industry partners, workforce investment boards and local nonprofit organizations
- Educate prospective students on funding opportunities
- Create funding map of available scholarships and aid programs
- Develop courses to accommodate industry work schedule

#### Implementation Group

- Workforce investment boards
- CUTC
- Universities
- Community colleges
- AACC
- Human and social services providers
- U.S. Department of Veterans Affairs

**“Universities working in collaboration with community colleges and LTAP Centers have an opportunity to help build and continually educate the 21<sup>st</sup> century transportation workforce and in turn show the vital role academia plays to achieve broader economic and social goals.”**

—John Collura, University of Massachusetts at Amherst

## Improving Student Readiness for the Transportation Workforce

Many current graduates lack the technical and non-technical skills to succeed in the transportation workforce, and some graduates struggle to transfer classroom knowledge into the workplace because they lack practical experience applying their abilities to the transportation industry. Increased opportunities for student projects and internships in transportation will better prepare them for careers in the field and provide a richer post-secondary experience.

### Sustainable City Year Program

The Sustainable City Year Program (SYCP) is a partnership between the University of Oregon and one city in Oregon per academic year in which a number of university courses assist the city with its sustainability goals and initiatives. The program encourages collaboration between students studying transportation, civil engineering, business, planning and public policy and a handful of other fields. SYCP engages students in real municipal projects, providing hands-on practical training in their fields of study.

## Goal: Improving Student Readiness for the Transportation Workforce

### Challenge

- Gaps in graduates' technical skills and abilities
- Inadequate non-technical and "soft skills" abilities
- Lack of experiential learning opportunities and practical experience in the transportation industry

### Strategy

- Define performance measures to assess student knowledge, skills and abilities
- Increase collaboration between the universities and the local governments and industry

### Action Item

- Engage industry in developing effective evaluations for graduates entering specific transportation occupations
- Identify gaps of existing programs and create on-the-job training opportunities to address inconsistencies
- Apply feedback from industry to recalibrate degree programs as needed
- Develop internship programs that utilize flexible Federal and State funding (such as CUTC funding)
- Create paid apprenticeship programs in industry
- Incorporate community engagement activities and service learning into transportation curriculum
- Work with municipal governments to create classroom projects that address real-world transportation problems

### Implementation Group

- CUTC
- Universities
- Community colleges
- AACC
- Employers
- Local governments

## Continuing Education and Transportation Workforce Retention

Workforce retention is vital to industry productivity and efficiency, but many sectors of the transportation industry face significant attrition challenges, as employees choose to switch positions within a company or mode, or to leave the transportation field entirely. In an opening Summit session, Patrick Natale of ASCE substantiated this workforce challenge, remarking that nearly 50 percent of engineering graduates leave the engineering fields at some point in their career.

In addition to retaining the transportation workforce, continued workforce training and development is both a challenge and priority. Rapidly changing technology requires regular retraining of current employees to keep pace with the industry's tools and products. Also, as individual workers shift roles within the industry or move into supervisory roles as their careers advance, they must acquire additional skills, both non-technical and technical as well as managerial. Bill Middleswart of the Federal Aviation Administration highlighted the need for both web-based and instructor-led training. Decentralized distance training is a cost-effective alternative to instructor-led sessions, but might not always be effective as there could be limited student participation. Promoting a blended approach of web-based and in-person training is effective for both the worker and industry.

## Increasing Transportation Workforce Retention in Underserved Populations

A majority of the transportation workforce is white, male, able-bodied, and English-speaking. Though individual companies and organizations have implemented programs to attract and retain underserved populations in the workforce, a gap persists. This gap is most significant for entry-level, manual labor positions. Margaret Downey from CSX reported that while 23 percent of CSX managers are women, they comprise only 7 percent of the workforce in the field.

The industry acknowledges that building a more diverse workforce and hiring more women, minorities, people with disabilities, and non-English speakers broadens the potential pool for employers, yet the challenge has been recruiting and retaining these workers. Increasing transportation workforce participation in underserved populations requires debunking myths about the potential opportunities and underserved populations alike, creating a favorable work environment for these groups, and addressing their unique needs.

## Goal: Increasing Transportation Workforce Retention in Underserved Populations

### Challenge

- Underserved populations still do not feel wanted or welcome in transportation fields
- The demanding schedule of some transportation occupations prohibits single parents or disabled workers from entering or staying in this field

### Strategy

- Educate current workers on diversity and acceptance
- Promote a positive, accurate image of underserved populations in the transportation workforce
- Create a cohort for underserved worker populations
- Identify and address unique needs of underserved populations

### Action Item

- Execute cultural competency training to debunk myths and change employee behavior and attitude
- Identify champions to serve as mentors
- Celebrate workers from underserved populations performing well in the field
- Create trade organizations
- Reserve some positions with traditional schedules for single parents
- Place disabled workers in positions in line with their capabilities

### Implementation Group

- Employers
- Workforce investment boards
- Trade organizations

### Accommodating an Aging and Multi-Generational Transportation Workforce

As the transportation workforce ages, there is widespread industry concern over how to transfer knowledge from those about to retire to the incoming generation of workers, as well as how to keep these older, experienced workers practiced and familiar with the emerging technologies in their fields. Through a collaborative culture of mentoring, young professionals can train older workers in recent

technological advances, while experienced professionals can instill lessons based on the existing tools and practical industry experiences. Increased technical training for all employees will keep all workers up-to-date and prepared for emerging technologies. Industry must also examine retirement projections in order to identify upcoming hiring and knowledge transfer needs. Implementing succession planning will ensure that retirements do not create gaps in expertise.

#### Goal: Accomodating an Aging and Multi-Generational Transportation Workforce

##### Challenge

- Technology skills vary widely among the workforce, often along generational lines
- Industry knowledge and skills are often lost as older generations retire

##### Strategy

- Create a collaborative culture of cross-generational mentoring
- Increase technical and technological training
- Examine retirement projections to identify needs

##### Action Item

- Build mentorship responsibility into job descriptions, performance and duties
- Design training exchange programs
- Implement succession planning

##### Implementation Group

- Employers
- Workforce investment boards
- Trade organizations

### Increasing Resiliency of the Transportation Workforce

In the presentation preceding this breakout session, Kathy Taylor discussed the current workforce situation at the Washington State DOT (WSDOT). As a result of significant budget cuts, management significantly downsized the WSDOT workforce. A case study of broader resiliency challenges, WSDOT aims to restructure efficiently and to shift roles to fill gaps. Common challenges faced by those in WSDOT's position include a lack of supervisory skills among promoted workers, and resistance from civil service and labor organizations as job descriptions change to meet organizational needs.

To combat these challenges, industry can work with labor and civil service groups to increase flexibility in assigning job duties. As an industry adapts its organizational structure, it can assess worker as-

**“These are challenges, but we must address them as opportunities.”**

—Kathy Taylor, WSDOT

sets and assign responsibility where appropriate. In addition, both industry and its labor and trade organization partners can increase middle-manager and executive job training, providing opportunities for successful workers to move their way up the career ladder.

#### Goal: Increasing Resiliency of the Transportation Workforce

##### Challenge

- Formal job descriptions and civil service regulations prohibit reorganization of roles and responsibilities
- Promoted workers often lack supervisory skills

##### Strategy

- Increase flexibility in assigning job duties
- Increase on-the-job soft skills training

##### Action Item

- Engage administration and/or organized labor to revise job modification parameters
- Conduct agency skill census to identify worker assets
- Embrace non-traditional means of completing work
- Develop middle-manager and executive leadership training
- Establish a clear system of accountability

##### Implementation Group

- State Departments of Civil Service
- Organized labor organizations
- Employers
- Workforce investment boards

## Adapting to the Constant Technological Advances in the Transportation Industry

Rapid changes in technology, specifically the use of ITS and Geographic Information Systems (GIS), have altered the way transportation agencies function as well as the skills required to work in these fields. Older, experienced transportation workers may not have received training in ITS and GIS in school, and instead learned these technological tools on the job. The transportation industry must balance between hiring new workers with niche technological expertise and training the existing workforce to adapt to the changing tools. Unfortunately, some technologies eliminate the need for existing professions, and there are often insufficient funds for keeping the workforce trained on current technology.

Transportation industry members can plan ahead, identifying which technology advances are strategic to adopt and prioritize for worker training. Sharing this knowledge, along with training materials across modes and State DOTs allows for across-the-board preparedness for emerging tools.

**Railroad Education and Development Institute**  
New CSX employees are trained at the Railroad Education and Development Institute, a nine acre training campus with over 10,000 ft. of live track space. More than 30,000 students have gained professional training as conductors, locomotive engineers, management trainees, yardmasters, communications and signal works, and track workers since its opening in 2005. The program continues to expand annually to accommodate additional occupations and technologies.

### Goal: Adapting to the Constant Technological Advances in the Transportation Industry

#### Challenge

- Skills needed to perform transportation occupations change as technology progresses
- Technology eliminates the need for certain occupations
- Need for constant retraining on technology updates
- Insufficient funds to keep workers trained on current technology

#### Strategy

- Identify strategic technology advances on the horizon and prioritize agency requirements
- Share technology training materials within the industry and across the modes
- Work with information technology and software companies for on-site training

#### Action Item

- Conduct regular technology scans
- Create partnerships with commercial vendors
- Establish a clearinghouse of training materials, instructors and resources
- Partner with education and training institutions for mid-career training and technology literacy
- Develop web-based trainings

#### Implementation Group

- Employers
- CUTC
- Transportation trade organizations

### Goal: Increasing Transportation Workforce Data Reliability and Accessibility

#### Challenge

- Unknown levels of supply and demand of transportation workers on a local, State or national scale

#### Strategy

- Pilot and develop a centralized database
- Gain industry participation and enlist stakeholders

#### Action Item

- Identify champions to lead a pilot project to develop and maintain a centralized, editable database
- Populate the database with job opportunities, internships, educational projects, and on-the-job training opportunities
- Identify local or regional gaps in the pipeline and in resources

#### Implementation Group

- CUTC
- Employers
- Transportation trade organizations
- U.S. DOL Bureau of Labor Statistics

### **Increasing Transportation Workforce Data Reliability and Accessibility**

All stakeholders that contribute to building and retaining the transportation workforce rely on data to determine levels of supply and demand of workers as well as levels of training and degree attainment in transportation-related fields. Jeff Strohl of the Georgetown University Center on Education and the Workforce identified several of the data gaps, explaining that Federal and State statistics are lagged, and that Bureau of Labor Statistics (BLS) data does not offer projections of education and skill demand. This field lacks a centralized, accessible data portal, hindering worker preparedness and industry performance. BLS education and training requirements data provide gross underestimations of education demand.

Strohl and others are now using internet job postings to identify employer demand and to defeat the problems of timely data, proprietary employer information, job tasks and technologies, and other occupation-related requirements. This data enables short-term occupation and skills projections models that can break job requirements into information about upcoming labor market needs in ways beneficial to training and retraining programs. A thorough database, created in partnership between industry and education, and utilizing the breadth of workforce supply and demand data, can provide students and educational institutions access to job and internship opportunities as well as training materials. It will also elucidate local or regional gaps in transportation opportunities and resources.

# NEXT STEPS: PUTTING THE FRAMEWORK INTO ACTION

The Summit's closing session reported out on the challenges, strategies, and action items identified throughout the week's breakout sessions. A panel of respondents, as well as the audience, provided comments and questions on the Summit outcomes. By consolidating the multitude of presentations and discussions into a set of concrete challenges and solutions, the report-out clearly identified themes underlying the Summit and the Framework for Action.

**“With almost every stakeholder group we talk to, this issue surfaces. It doesn't matter if we're talking to industry, business, advocates, consumer groups, labor union...Everyone cares about this issue.”**

—Bryna Helfer, U.S. DOT

**1. Partnering, collaboration and information sharing is integral to improving the transportation workforce.** In addition to contributing to the development of the Framework for Action, the Summit provided the 250 attendees an opportunity to learn from their peers and connect to other professionals in their region, State, and nationwide. Kathy D'Antoni, Assistant State Superintendent of Schools in West Virginia, reminded stakeholders during this final session to “build upon, rather than duplicate” efforts. Throughout the Summit, representatives from industry and education shared innovative programs that are being implemented at the local and State level. Many of these programs are applicable to and could be transferable to other schools, industries, or State DOTs. The Framework for Action emphasizes building on existing successful efforts and having mechanisms to share that information widely.

Several action items described in the Framework for Action suggest developing databases and clearinghouses of best practices and effective techniques for recruitment, preparation and retention of the workforce. There is a breadth of resources available for beginning to overcome the challenges facing today's workforce, and compiling and sharing these resources will drastically improve workforce development. These efforts should be well-resourced and, while innovation in education and training initiatives should not be stifled, funding should support replication and collaboration efforts as well.

**2. Every stakeholder plays a role in transportation workforce development.** The session's moderator, West Virginia State Senator Robert Plymale, stressed to the audience that the Framework for Action is not to be executed by the Summit sponsors or Federal transportation, education or labor agencies alone. Rather, he asked all Summit participants to identify their roles as employers and educators in improving the transportation workforce, as well as what they can do as parents and community members to stem these challenges. As discussed in the Summit's opening remarks by the Assistant Secretaries of Transportation, Education, and Labor, each sector has distinct and valuable contributions to make in support of well-rounded workforce development – from recruitment and training to retention and succession planning initiatives. The Summit exemplified how much individual stakeholders are already contributing. It pointed out that no stakeholder should stand to the side and wait for another to develop needed programs and initiatives.

**3. The breadth of the transportation field requires a broad range of efforts and approaches.** The transportation industry employs workers of all skill levels, with educational backgrounds from high school diplomas to advanced degrees. It is multi-generational, and its occupations require dozens of varying technical and technological skills as well as communication, collaboration, teamwork,

and supervisory abilities. Transportation employs in both rural and urban settings, in every climate, and in every State. Reaching out to the potential workforce once will not make the necessary difference, and just one approach to career awareness will not reach every student or worker.

Summit speakers and participants acknowledged that a single approach to training is not sufficient. Neither classroom nor on-the-job training alone prepares workers for careers in transportation. Hands-on training and educational opportunities should be part of on-the-job training to allow workers to continue to build the skills necessary to meet changing conditions and address new challenges. A viable workforce development strategy allows for a variety of opportunities for young and mid-career workers new to transportation, as well as for those professionals experienced in the field.

These underlying themes of collaboration, partnering, stakeholder initiative and the need for a comprehensive approach apply to each strategy of the Framework for Action.

The Summit began by contemplating the issues of the rapidly changing demographics of an aging and diversifying workforce; of insufficient workforce awareness and preparation; of rapidly advancing technology creating a new norm of constant change in the tools workers need to use; and the increased demand and expectations on the transportation infrastructure and the agencies that design, build, maintain and operate them. The Framework for Action provides a sound foundation for advancing the work that is necessary at the scales of both individual projects and national cross-organization collaborations. The Summit showcased the transportation workforce challenges and brought together some best practices in the field to stimulate a new approach to advancing workforce development in transportation. Overall, the Summit was considered by its planners and participants to have been productive. In order to succeed going forward, it will take the commitment of all stakeholders to advance the aspects of the framework with which they are best aligned, and to build collaborative partnerships with other stakeholders in order to coordinate and leverage the activities of the whole network.

*Executing the Framework for Action will be a coordinated effort by all stakeholders in the transportation workforce. To get involved with local, State, or national efforts to better recruit, train and retain both today and tomorrow's transportation workforce, contact the Framework team at: [NTWDfeedback@dot.gov](mailto:NTWDfeedback@dot.gov).*

# AGENDA

## Day 1

### OPENING REMARKS: An Overview of the Summit objectives, format and program

Teresa Adams, Director, National Center for Freight and Infrastructure Research and Education, University of Wisconsin-Madison; President-Elect, Council of University Transportation Centers

### PLENARY SESSION 1: Workforce Development Leadership: Coordination, Communication, Collaboration

The Department of Transportation, Education and Labor are leaders in workforce development and in their communities. The Assistant Secretaries will discuss their priorities, issues and activities to provide for more effective, efficient workforce development.

#### SPEAKERS:

**Polly Trottenberg**, Assistant Secretary for Transportation Policy, U.S. Department of Transportation

**Brenda Dann-Messier**, Assistant Secretary for Vocational and Adult Education, U.S. Department of Education

**Jane Oates**, Assistant Secretary of Employment and Training, U.S. Department of Labor

### PLENARY SESSION 2: The Changing Workforce in a Changing World

Demographic changes, budgetary constraints, immigration, drug-use, public health issues, and new technologies continue to challenge transportation, education and labor efforts to provide for a skilled, technically competent workforce.

Forum participants are leaders in their fields with important perspectives on workforce development. Their discussion will establish a foundation for the Summit sessions to follow which will focus on strategic and operational policies and programs to enhance workforce development.

**Moderator:** Jeffrey Bryan, Change Management Specialist, Volpe National Transportation Systems Center

#### SPEAKERS:

**Pamela Boswell**, Vice President, Program Management Educational Services, American Public Transportation Association

**Julie Cunningham**, President and Chief Executive Officer, Council of Minority Transportation Officials

**Marcia Ferranto**, President and Chief Executive Officer, Women's Transportation Seminar

**Ed Hamberger**, President and Chief Executive Officer, Association of American Railroads

**John Horsley**, Executive Director, American Association of State Highway and Transportation Officials

**Patrick Natale**, Executive Director, Chief Staff Officer & Secretary, American Society of Civil Engineers

**T. Peter Ruane**, President & CEO, American Road & Transportation Builders Association

**Edward Wytkind**, President Transportation Trades Department, AFL-CIO

### WORKFORCE DEVELOPMENT, NEED, OPPORTUNITY, ACTION:

**Introduction:** Greg Winfree, Acting Administrator, Research and Innovative Technology Administration

**The Honorable Ray LaHood**, Secretary of Transportation, U.S. Department of Transportation

Secretary LaHood recognizes the important role of the Nation's transportation workforce and the need for coordination across transportation, education and labor for success in workforce development. The Secretary will provide his vision of the transportation enterprise and his expectations for the National Workforce Summit.

#### LUNCH SPEAKER:

**Frank A Stasiowski**, FAIA, is the president and founder of PSMJ Resources

### PLENARY SESSION 3: Building/Raising Career Awareness

This session is intended to deal with a range of issues related to making people aware of potential careers in transportation.

**Moderator:** Scott Hess, Education Program Specialist for College and Career Transitions, U.S. Department of Education

## SPEAKERS:

**Kathy D'Antoni**, Assistant State Superintendent of Schools, Charleston, West Virginia

**Kimberly A. Green**, Executive Director, National Association of State Directors of Career and Technical Education

**James P. Brough**, National Aviation and Space Education Manager, Federal Aviation Administration, U.S., Department of Transportation

## SESSION 3 BREAKOUTS:

Breakouts will address the following questions: What has been done to build career awareness? How do individuals make career choices? What are the key influencers and how do we get transportation properly in the mix? How do we engage teachers and increase their level of awareness?

**Session 3, Breakout 1:** Policy and Implementation Opportunities to Connect the K-12 System with Postsecondary Education and Careers

**Facilitator:** Scott Hess, Education Program Specialist for College and Career Transitions, US Department of Education

### Discussants:

**Ray Davis**, Education Associate/Career Guidance, Office of Career & Technology Education, South Carolina Department of Education

**Kathy Mc Nerney**, Education Program Supervisor, CTE Systems Branch, Division of Career and College Readiness, Maryland State Department of Education

**Fran Beauman**, Project Director, Transportation Careers, Two Rivers Professional Development Center

**Session 3, Breakout 2:** Reaching out to the Future Workforces: Pre-K through post-Baccalaureate

**Facilitator:** Leslie Washburn, Special Projects Engineer/ Workforce Development Coordinator, University of Florida

### Discussants:

**Rema Nilakanta**, Program Manager, Institute for Transportation, Iowa State University

**Linda Castner & Maxine Scheer**, President, Take Flight Solutions

**Suzanna Long**, Assistant Professor, Missouri University of Science & Technology

**Session 3, Breakout 3:** Second Careers, Career Reentry

**Facilitator:** Deborah Rosen, Director, University of Rhode Island Transportation Center

### Discussants:

**Lance Anderson**, Vice President, Workforce Research Center, ICF International

**Kevin Reid**, Founder & CEO, National Association for Minority Truckers

**Larry Johnson**, President, Nebraska Trucking Association

**Session 3, Breakout 4:** Workforce Needs in Public Transit & Railroads

**Facilitator:** Peter Haas, Education Director, Mineta Transportation Institute, San Jose State University

### Discussants:

**Cheryl Pyatt**, Program Manager—Educational Services, American Public

**Monique Stewart**, Program Manager, Federal Railroad Administration

**Dallas Richards**, National Rail Principal, ARCADIS U.S, Inc.

**Pasi Lautala**, Director, Rail Transportation Program, Michigan Technological University

## SHOWCASE DISPLAY—MEET AND GREET THE AUTHORS

## Day 2

### PLENARY SESSION 4: From the Classroom to the Workplace: Changing Roles for Colleges and Universities and their Partners in Industry and Government

This session addresses the changing market for traditional educational services at colleges and universities, and what this means for schools as well as their partners in industry and government. Speakers will consider both the challenges (including budget constraints) that prevent community colleges and four-year institutions from responding to changing workforce demands and opportunities including new learning models that help bridge gaps between the classroom and the workplace.

**Moderator:** Jill Hough, Program Director, Small, Urban and Rural Transit Center, Upper Great Plains Transportation Institute, North Dakota State University

## SPEAKERS:

**Jeff Strohl**, Director of Research, Georgetown Center on Education and the Workforce

**John Dorrer**, Program Director, Jobs for the Future

**Kathy Mannes**, Director, Center for Workforce and Economic Development, American Association of Community Colleges

## Respondents:

**Lance Anderson**, Vice President, Workforce Research Center, ICF International

**Al Koller**, Executive Director, SpaceTEC Partners, Inc.

## SESSION 4 BREAKOUTS:

Breakouts will address the following questions: What are colleges and universities doing to align resources with demand for services and creative innovative workforce development programs? How are colleges and universities and their government and industry partners responding to resource constraints? What smarter ways have they identified to do their work? What are the Best Practices in workforce development that bridge the divide between classroom and workplace? What research is needed? Breakout Facilitators will move between breakout rooms and provide reports on discussions from other sessions.

## Breakout Facilitators:

**Allan Byam**, UMass Transit Services, University of Massachusetts Amherst

**Brett McCormick**, University of North Texas

**Kyle Taylor**, University of North Texas

**Session 4, Breakout 1:** Transportation Workforce Development in the University Setting: Degree Programs and Professional Development

## Session Starter

“Expanding Transportation Education Across the Academy: The Sustainable City Year Program”

**Marc Schlossberg**, Associate Professor of Planning, Public Policy and Management, University of Oregon

**Nico Larco**, Assistant Professor of Architecture, University of Oregon

**Session Facilitator:** Karyn M. Warsaw, Chair, Transportation-Public Health Link

## Discussants:

**Arnulf P. Hagen**, Technical Director, Oklahoma Transportation Center

**Jeffrey Wharton**, Chair, American Public Transportation Association Business Member Business Development Committee and President, IMPulse NC, LLC

**Session 4, Breakout 2:** What’s Unique about Community Colleges?

## Session Starter

“The Future is Now: Transportation Systems and Technologies Require New Learning Models: The Southern California Regional Transit Training Consortium (SCR TTC)”

**Jesus Guerra**, Chair, Education Services Committee, SCR TTC and Instructor, LA Trade Tech College

**Session Facilitator:** Gerhard Salinger, Program Manager, National Science Foundation

## Discussant:

**Kipp Snow**, Instructional Specialist, Business Management Anne Arundel Community College

**Session 4, Breakout 3:** Bridging the Gap Between Community Colleges and Universities: Transforming the Educational Continuum from Idea to Reality

## Session Starter

“Adult Learners: Principles, Barriers and Best Practices”

**Michelle R. McFarland**, Assistant Director, Oklahoma Transportation Center

**Session Facilitator:** Valerie Lefler, Program Coordinator, Mid-America Transportation Center, University of Nebraska

## PLENARY SESSION 5, SEGMENT 1: Future Shock: A Discussion Around the Effect of Technology on Transportation Workers

This segment addresses technology effects on the nature of our work and the skills that will be required in the future. Speakers will address how technology will be transferred to the existing workforce, the retraining that will be necessary to provide mission critical functions and also what policies and legislation need rethinking in light of trends.

**Moderator:** Martin Pietrucha, Director, Pennsylvania State University

## SPEAKERS:

**Bill Middleswart**, Office of Future Training Programs, Federal Aviation Administration.

**Greg Ferrara**, Leader, Visual Analytics, Modeling, and Simulation (VAMS) Group, Institute for Transportation Research and Education (ITRE), North Carolina State University

**Allen Biehler**, Distinguished Service Professor of Public Policy, H. John Heinz III College, School of Public Policy and Management, and Director, Technologies for Safe and Efficient Transportation Center, Carnegie Mellon University

**Ruth Otte**, Executive Vice President—Marketing & Communications, Veolia Transportation

## PLENARY SESSION 5, SEGMENT 2: Leading Continuing Education, Training and Professional Development in the Future

This segment will focus on the challenges and issues surrounding the tasks of identifying skill sets, training needs and resources for the future. The speakers will discuss how they are trying to prepare future leaders and how do they set priority of continuing education, training and professional development activities? When layoffs occur and the last in is the first out, who is going to do the work, and what training will be necessary? What policies and legislation need rethinking in light of trends?

**Moderator:** Diana Long, Director of Workforce Development, Rahall Transportation Institute

### SPEAKERS:

**Kathy Taylor**, Human Resources Director, Washington State Department of Transportation

**Rich Greenwood**, Director of Strategic Workforce Development, CSX

**Margret Downey**, General Manager of Instructional Design, CSX

### Session 5, Breakout 1: Advanced Technology: The Game Changers

This breakout will discuss the challenges associated with the impact of Intelligent Transportation Systems (ITS) will affect the role and function of Departments of Transportation and how technology applications such as distance learning platforms will change the way continuing education, skill development and professional education will be delivered.

**Facilitator:** Scott Rutherford, University of Washington

#### Discussants:

**Mac Lister**, Program Manager, ITS Knowledge and Technology Transfer, RITA and Joint Program Office, USDOT,

**Steven Polzin**, Director, Mobility Policy, Center for Urban Transportation Research

### Session 5, Breakout 2: Transit Issues

The transit sector will discuss challenges and strategies surrounding the impact of technology on the system design, equipment operation as well as the skill sets necessary for the workers to be able to support them. How will tenured workers be upgraded? Who are

the partners? What strategies dovetail on workforce development efforts already in progress?

**Facilitator:** Betty Jackson, Federal Transit Administration

**Discussant:** Joseph Niegoski, American Public Transportation Association

### Session 5, Breakout 3: The Aging Transportation Workforce

This breakout will engage labor, industry and workers in a frank discussion about the issues associated with aging workers, perhaps no longer as able to do physical work as younger people. Do seniority policies help or hinder? What about job reclassification, is it a solution? If layoffs occur and only the more mature are left, (last in, first out) what are the issues? Solutions? Best Practices?

**Facilitator:** Warren Lavey, Senior Counsel, American Clean Skies Foundation

#### Discussants:

**Jedd Dodd**, Director of Passenger Rail, Brotherhood of Maintenance of Way Employees Division, International Brotherhood of Teamsters

**Jay Paterson**, Vermont Technical College

### Session 5, Breakout 4: Career Advancement: Issues with Underserved Populations in Transportation

This breakout will focus on specific career advancement challenges for “Underserved Populations” i.e., women, minorities, disabled persons, face in blue collar transportation occupations. How do the challenges differ for distinct occupations such as engineer, mechanic, pilot, trucker, bus driver, manager or front line worker? What are the workplace culture issues that need to be addressed? What educational & training opportunities have you found to be effective for women and underrepresented populations? What actions should be taken at the national, regional, state or local level?

**Facilitator:** Kristy L Wood, Mountwest Community & Technical College

#### Discussants:

**Ellen Voie**, President, Founder & CEO, Women In Trucking

**Pat Greenfield**, Senior Program Director of Workforce Education, Transportation Learning Center

**Margaret Downey**, General Manager of Instructional Design, CSX

## Day 3

### KEY CHALLENGES AND NEXT STEPS:

The outcome of this session will be to reach consensus on strategies and actions to pursue jointly over the next 6 months. We will also identify roles and commitments from partners to implement the actions.

**Introduction:** John Collura, Summit Co-Chair, University of Massachusetts at Amherst

**Moderator:** Robert Plymale, Director, Rahall Appalachian Transportation Institute & West Virginia State Senator

Each of the following Report Outs were followed with an invitation for response from leaders & policy makers within government, industry & labor, education & the audience.

**REPORT OUT: Building/Raising Career Awareness**  
**Shashi Nambisan**, Iowa State University

**REPORT OUT: From Campus to the Workforce: Changing Roles for Community Colleges & Universities in the Transportation World**

**Tom O'Brien**, California State University, Long Beach

**REPORT OUT: Transportation Professional and Continuing Education**

**Diana Long**, Marshall University

### CLOSING REMARKS:

**Teresa Adams**, University of Wisconsin-Madison

# ACRONYMS LIST

American Association of Community Colleges (**AACC**)

American Association of State Highway & Transportation Officials (**AASHTO**)

American Public Transportation Association (**APTA**)

American Road & Transportation Builders Association (**ARTBA**)

American Society of Civil Engineers (**ASCE**)

Bureau of Labor Statistics (**BLS**)

Career Technical Education (**CTE**)

Council for University Transportation Centers (**CUTC**)

Council of Minority Transportation Officials (**COMTO**)

Credentials that Work (**CTW**)

Department of Transportation (**DOT**)

Geographic Information Systems (**GIS**)

Intelligent Transportation Systems (**ITS**)

National Association of State Directors of Career Technical Education Consortium (**NASDCTEC**)

National Cooperative Highway Research Program (**NCHRP**)

National Science Foundation (**NSF**)

Railway Engineering Education Symposium (**REES**)

Science, Technology, Engineering and Mathematics (**STEM**)

Southern California Regional Transit Training Consortium (**SCRITTC**)

Sustainable City Year Program (**SYCP**)

U.S. Department of Education (**U.S. ED**)

U.S. Department of Labor (**U.S. DOL**)

U.S. Department of Transportation (**U.S. DOT**)

Washington State DOT (**WSDOT**)

Women's Transportation Seminar (**WTS**)

