

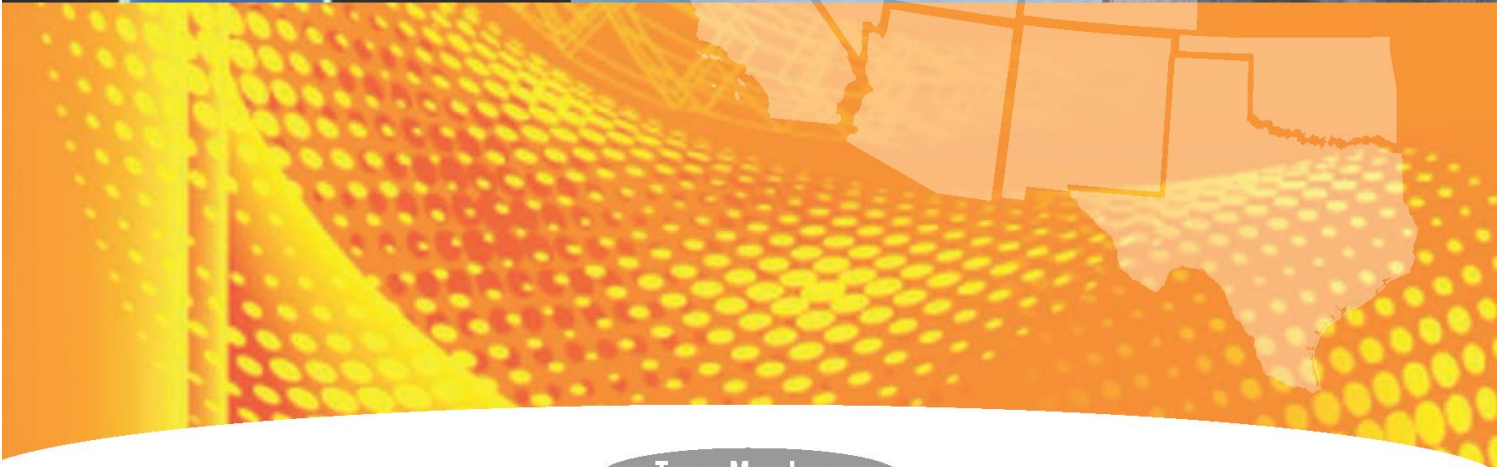
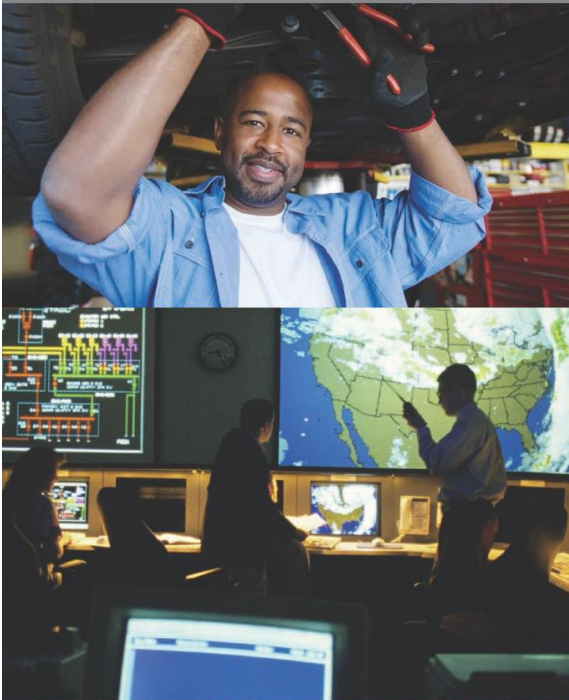
Job Needs and Priorities Report, Phase 2: Southwest Region



SWTWC

Southwest Transportation Workforce Center

Connecting and Empowering the Transportation Workforce



Team Members



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Job Needs and Priorities Report, Phase 2 Southwest Region

I. Introduction

Housed at the Center for International Trade & Transportation (CITT) at California State University, Long Beach (CSULB), the Southwest Transportation Workforce Center (SWTWC) serves a region with public and private passenger and freight transportation networks that are among the most extensive in the world. SWTWC's eight member states—California, Nevada, Arizona, New Mexico, Colorado, Utah, Texas, and Oklahoma—represent a vast geographic expanse that includes very different urban, suburban, and agricultural workforce settings as well as several globally significant ports, numerous international and domestic airports, and the international border with Mexico. The region also includes the nation's two most populous states, 12 of the nation's 25 most populous cities, and growth rates that exceed national figures, which implies a growing and changing workforce (U.S. Census 2015). The Southwest region provides a unique laboratory to study workforce needs tied to both urban and rural transportation services, transportation in and through Border States, trade gateways and corridors, and states with sizable Native American and Hispanic populations among others.

SWTWC and its technical partners, the University of Southern California (USC), Texas A&M University Transportation Institute, the National Occupational Competency Testing Institute, and ICF International, are dedicated to assessing and developing the transportation workforce across the region and four focal areas: intelligent transportation systems, corridor management, borders and gateways, as well as diversity in the transportation workforce.

II. Report Overview

As the nation moves forward in the 21st century, many challenges face the transportation industry; changing skill sets for current employees, large numbers of workers heading towards retirement, and the technological innovations that are changing the face of transportation itself will invariably cause gaps in the workforce pipeline. In January 2015, SWTWC started a two phased Transportation Job Needs and Priorities Research effort, which was designed to assess these challenges and address the transportation workforce needs in the region.

'Phase 1' of the Job Needs and Priorities assessment allowed SWTWC to identify priority jobs and set the stage for meaningful regional workforce discussions and initiatives. In the findings, a broad summary of the region's transportation workforce and industry is presented along with an analysis of Southwest labor market data. Combining stakeholder input with historic, current, and future occupational estimates for transportation occupations, Phase I also identified 13 regional priority occupations as target areas for future center workforce development efforts (see Exhibit 1).

Exhibit 1: Southwest Priority Occupations as Identified through Phase 1

SOC Code	SOC Occupation Title	Southwest Percent Change 2012-2022	National Percent Change 2012-2022
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	16.8%	8.7%
53-3021	Bus Drivers, Transit and Intercity	14.7%	9.8%
11-3021	Computer and Information Systems Managers	22.4%	15.3%
17-2051	Civil Engineers	23.9%	19.7%
53-3032	Heavy and Tractor-Trailer Drivers	19.5%	11.3%
13-1081	Logisticians	33.7%	22.0%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	18.5%	11.0%
47-2073	Operating Engineers and Other Construction Equipment Operators	22.6%	18.9%
17-1022	Surveyors	14.1%	10.4%
17-3031	Surveying and Mapping Technicians	21.0%	13.5%
53-6041	Traffic Technicians	11.3%	10.6%
11-3071	Transportation, Storage, and Distribution Managers	15.5%	4.8%
19-3051	Urban and Regional Planners	16.8%	10.3%

The purpose of this Phase 2 report is to describe the subsequent research and results, which involved assessing potential workforce programs and partnerships to address the workforce gaps identified in Phase 1, while also presenting strategic ‘action plans’ that will serve as the impetus to move related workforce development initiatives forward. SWTWC’s four strategic action plans reflect the programs and impacts that the Center wishes to make on the transportation workforce and the various systems that support this community. These strategic plans include:

- Action Plan 1: Promoting Apprenticeship Programs for the 21st Century
- Action Plan 2: GIS Tribal Training Initiative
- Action Plan 3: Promoting Awareness of Trucking Occupation
- Action Plan 4: Attracting Non-traditional Candidates to the Supply Chain Industry

As indicated, the actions align with SWTWC’s mission, values, focus areas, as well as the 13 priority occupations identified in Phase I.

The research and full strategies supporting these action plans are described in the remainder of this report. Once implemented, the four strategies will serve as the foundation by which the Center will assist stakeholders across the region in meeting their workforce development needs.

III. Phase 2 Methodology

The methodology for conducting this research includes several key steps, as described below.

Stakeholder Workshops and Literature Review. To kick off Phase 2, our team participated in a series of virtual-based workshops with the SWTWC Steering Committee to discuss the Phase 1 results, the Center’s plans for 2016, and how this information should inform the Phase 2 action plans. Using workshops results, the research team conducted a review of transportation-related training, education, and outreach programs, within the region and nationally, based on the Center Workforce Program Compendium. Specifically, the team documented those programs aligned with the priority occupations identified in Phase 1. The goal was to address gaps in skill development and define opportunities for program expansion to reach a wider group of participants in the region.

Development of Draft Action Plans. The workshop and literature review results informed the development of the four strategic action plans. The plans, designed to enhance regional workforce development efforts, defined priority program areas and offered guidance for program implementation. Further, the draft plans described detailed steps for implementation, identified relevant initiatives, and defined potential partners to support program. Center leadership then provided input and feedback to further develop and refine the concepts, to ensure they effectively met industry needs.

Engage Center Stakeholders. The research team then gathered input and feedback directly from regional transportation stakeholders regarding the relevance, applicability, and overall feasibility of the action plans. This involved developing an interview protocol with questions framed around the action plans (e.g., ‘Does the description of this action plan and its intended audiences make sense in the context of the transportation industry across the region?’ and ‘What do you see as barriers to effective implementation of a plan like this?’). Prior to the interview, participants receive the interview protocol and action plan summary document for review. This allowed the team to focus the discussion on action plans which the participants felt they could provide the most input on. Appendix A provides the full interview protocol. See Exhibit 2 below for a full list of stakeholders interviewed. All sessions were conducted in July and August of 2016.

Exhibit 2: Southwest Region Stakeholders Interviewed		
Name	Agency	Position Title
Terry Bills	Environmental Systems Research Institute (Esri)	Transportation Industry Manager
Rick Blasgen	Council of Supply Chain Management Professionals	President
Chris Cagle	South Bay Workforce Investment Board	Regional Affairs Manager
Jennifer Cleary	Rutgers University	Associate Director
Craig Crick	Nevada Department of Transportation	Training Officer
Kristin Decas	Port of Hueneme	CEO & Port Director
Kevin Fleming	Norco College	Dean of Instruction, Career & Technical Education; Principal Investigator, National Center for Supply Chain Automation
Fran Inman	Majestic Realty	Senior Vice President

Fred Johring	Golden State Logistics / Harbor Trucking Association	President / Chairman
Joseph Kane	Brookings Institute	Senior Research Analyst and Associate Fellow
Lee Lambert	Pima Community College, Tucson, AZ	Chancellor
Dan Pearsall	Conference of Minority Transportation Officials, Colorado	Senior Project Manager
Karla Sisco	Oklahoma State University	Program Manager
Dave Stumpo	American Public Transit Exams Institute	CEO
Jan Vogel	South Bay Workforce Investment Board	Executive Director

Refine and Finalize Action Plans. Based on stakeholder input, the research team finalized the four Southwest action plans. The final action plans include specific details related to the target audiences, relevant priority occupations, implementation steps, communication plans, helpful resources, examples of effective programs, the potential positive impact of the action plans, as well as any cautionary considerations in implementing the plans. Ultimately, the plans will help the region's transportation industry close workforce gaps in priority occupations, while enabling the Center to achieve related goals and objectives.

IV. Overviewing of Region's Programs, Related Action Plans and Supporting Research

A summary of the Southwest target workforce development programs and associated action plan components is provided in Exhibit 3.

Exhibit 3: Overview of Workforce Development Programs for Workforce Development			
Program	Priority Occupations	Education Level / Level of Training	Partnership(s)
Action Plan 1: Promoting Apprenticeship Programs for the 21 st Century	<ul style="list-style-type: none"> Surveying and Mapping Technicians Operating Engineers and Other Construction Equipment Operators Bus and Truck Mechanics and Diesel Engine Specialists Transportation, Storage, and Distribution Manager Logisticians Laborers and Freight, Stock, and Material Movers, Hand 	<ul style="list-style-type: none"> High school Community Colleges 4-Year Colleges Other Adults 	<ul style="list-style-type: none"> U.S. Chamber of Commerce L.A. Trade and Technical College Schneider National Kuehne + Nagel
Action Plan 2: GIS Tribal Training Initiative	<ul style="list-style-type: none"> Urban and Regional Planners' Surveying and Mapping Technicians 	Entry level	<ul style="list-style-type: none"> Esri Native American Transportation Issues Committee

	<ul style="list-style-type: none"> Heavy and Tractor-Trailer Drivers 		<ul style="list-style-type: none"> of the Transportation Research Board Choctaw Nation of Oklahoma Cultural Services and GIS and GPS Specialist
Action Plan 3: Promoting Awareness of Trucking Occupation	<ul style="list-style-type: none"> Heavy and Tractor-Trailer Drivers 	Entry level	<ul style="list-style-type: none"> SWTWC's Action Subcommittees Pima Community College
Action Plan 4: Attracting Non-traditional Candidates to the Supply Chain Industry	<ul style="list-style-type: none"> Transportation, Storage, and Distribution Manager Logisticians Laborers and Freight, Stock, and Material Movers, Hand 	Entry level	<ul style="list-style-type: none"> SWTWC's Action Subcommittees

An overview of each action plan along the research supporting the plan's importance to the region is provided below. Full action plans can be found in Appendix B.

Research Supporting Action Plan 1 (AP1): Promoting Apprenticeship Programs for the 21st Century

AP1 Program Summary: This strategy will promote apprenticeship programs that will attract new employees to develop a qualified workforce for the priority occupations in the Southwest transportation workforce. These outreach efforts directly engage public- and private-sector employers, and target K-12, technical school, community college, four-year college, graduate school, and incumbent workforce audiences.

AP1 Program Description: At the 2012 Council of University Transportation Centers' National Transportation Summit, attendees discussed four major challenges to the transportation workforce: demographic changes, career awareness/recruitment, new technologies, and the increasing demand for a workforce with a wider range of skills and experiences. SWTWC built upon those 2012 insights with further engagement with industry and academic stakeholders, which confirmed the need for apprentice programs to bridge the gap between the academic continuum and the professional world. In response to those workforce development challenges facing not only emerging professionals but also employers, SWTWC recommends implementing a series of web seminars (or webinars) titled "Apprentice Programs for the 21st Century" where attendees can learn and participate in real-time online discussions about apprentice programs available throughout various transportation sectors. Webinars will include information on development



methodology and implementation best practices. Although these webinars are primarily targeted at companies to create and implement apprenticeship programs, they will double as resources for students entering the workforce to learn about available opportunities and next steps. Ultimately, these webinars will: highlight successful apprentice programs, share implementation best practices, share engagement and recruitment strategies, provide industry leading speakers, and promote valuable opportunities within transportation. SWTWC will archive those webinars on its transportation workforce data clearing house and on its YouTube channel.

AP1 Importance in the Southwest Region: SWTWC’s *Job Needs and Priorities Report Phase 1: Southwest Region* identified jobs in the region that are critical to the transportation industry, increasing in the number of jobs/demand, and in need of a workforce focus. Many of these jobs could potentially benefit from greater participation in apprenticeship programs. By hosting webinars, SWTWC will be able to cost-effectively disseminate information to a large, diverse audience of potential employees while enabling the entering workforce to connect skill sets to specific jobs from industry leaders. The webinars will also eliminate travel and scheduling barriers since participants can attend remotely and asynchronously. Finally, the series of webinars will prioritize a discussion about transportation workforce needs.

AP1 Relevant Research: SWTWC is in an important position to spearhead marketing and dissemination efforts to increase attraction to and participation in apprenticeship programs across the region. First, these webinars can attract new employees by highlighting career opportunities and benefits for individuals who complete apprenticeships. For example, research conducted on apprenticeship programs in ten states indicates that those who participate in apprenticeship programs earn an average of \$98,718 more over the course of their career than those who do not participate. Furthermore, those who participate in and complete an apprenticeship program earn an average of \$240,037 over the course of their career compared to those who do not participate (Reed et al., 2012). These webinars can also highlight benefits for employers who may be interested in developing and implementing apprenticeship programs. For example, investing in apprenticeships can save organizations recruitment and training costs, given that employees can be more accurately placed in positions that match the knowledge and skills gained in the apprenticeship. As a result, these programs help employers to reduce skill gaps. In a study consisting of 900 organizations with apprenticeship programs, approximately 90% of organizations reported they would highly recommend apprenticeship programs to others, because the programs helped meet skill demands and reduce gaps (Lerman et al., 2009).

Second, increasing awareness of apprenticeships for priority occupations can help to fill demand for those occupations. As displayed in Exhibit 4 below, the projected increase in demand for the six targeted occupations for this action plan range from 15.5% for transportation, storage, and distribution managers to 33.7% for logisticians.

Exhibit 4: Occupational Projections for Action Plan 1 Target Occupations					
SOC Code	Occupation Title	# of Employees, 2012	Projected # of Employees, 2022	Change in # of Employees	Percent Change
49-3031	Bus and Truck Mechanics and Diesel	64,290	75,060	10,770	16.8%

Exhibit 4: Occupational Projections for Action Plan 1 Target Occupations

SOC Code	Occupation Title	# of Employees, 2012	Projected # of Employees, 2022	Change in # of Employees	Percent Change
	Engine Specialists				
13-1081	Logisticians	35,330	47,230	11,900	33.7%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	586,480	704,130	117,650	20.1%
47-2073	Operating Engineers and Other Construction Equipment Operators	91,940	112,720	20,780	22.6%
17-3031	Surveying and Mapping Technicians	16,750	20,270	3,520	21.0%
11-3071	Transportation, Storage, and Distribution Managers	29,610	34,200	4,590	15.5%

Given the high demand for these occupations, transportation employers in the region must be able to effectively conduct outreach to a large audience. Because webinars can be attended remotely, they will provide employers the opportunity to do so, potentially attracting a larger number of employees to meet the growing demand. Additionally, it is becoming increasingly important for transportation agencies to be able to effectively recruit millennials and younger generations entering the workforce. In 2014, the average age of employees for the six targeted occupations in this action plan was over 40 years, with the exception of bus/truck mechanics and diesel engine specialists. As such, these webinars can potentially attract members of the new developing workforce.

Research Supporting Action Plan 2 (AP2): GIS Tribal Training Initiative

AP2 Program Summary: This action plan focuses on developing a training program that engages tribal populations interested in a career with Geospatial Information Systems (GIS) skills that can be used to build a cadre of skilled GIS professionals in tribal populations. Secondly, this action plan will result in data collection opportunities for road safety, transportation, and culture metrics within particular regions of interest.

AP2 Program Description: The formation of a GIS training initiative for tribal populations will have both educational and economic merit. First, the training could help foster new career pipelines for both urban and rural tribal youth wishing to enter the workforce beyond their respective communities. Second, the initiative will help capture data relating to road safety, transportation, and cultural metrics within tribal lands.



AP2 Importance in the Southwest Region: Priority transportation occupations were identified in the Southwest region to determine beneficial areas in which to invest resources into workforce development. Due to rapidly progressing technology, the skills within these occupations are constantly changing, meaning there is a continuous high demand for individuals in these fields with new skills to enter the industry. The technical expertise that comes with these occupations is vital to the industry, particularly with regard to the increasing use of GIS and ITS. For example, civil engineers, Surveyors, and Urban and Regional Planners are increasingly required to develop GIS skills. Skill-based training that helps future and current employees close performance gaps in GIS is a critical step to the continued and future success of the transportation workforce.

AP2 Relevant Research: GIS skills will increasingly be required for a range of critical transportation occupations identified in SWTWC labor market analysis (Exhibit 5).

Exhibit 5: Occupational Projections for Action Plan 2 Target Occupations					
SOC Code	Occupation Title	# of Employees, 2012	Projected # of Employees, 2022	Change in # of Employees	Percent Change
17-3031	Surveying and Mapping Technicians	16,750	20,270	3,520	21.0%
17-1022	Surveyor	13,200	15,060	1,860	14.1%
53-6041	Traffic Technician	1,150	1,280	130	11.3%
19-3051	Urban and Regional Planners	11,590	13,540	1,950	16.8%

From 2012-2022, employment of surveyors is expected to increase 14.1%, urban and regional planners by 16.8%, traffic technicians by 11.3%, and surveying and mapping technicians by 21%. The high demand increase means that the transportation industry needs to expand skills in underrepresented populations to sufficiently meet future demands. The demographic profile of the surveying and mapping technician occupation demonstrates potential in expanding a diverse workforce. In 2015, only 5.2% of surveying and mapping technicians were women. Furthermore, minority populations are greatly underserved in career and technical education (CTE) occupations. For the survey and mapping technician occupation, in 2015 only 3.5% were Black or African American, 4.1% were Asians and those of Hispanic or Latino ethnicity were 7.2%. According to analyses conducted by the Bureau of Labor Statistics, the American Indian race is represented extremely minimally, if at all. Beyond promoting entry-level trucking positions, SWTWC will also promote entrepreneurial career pathways for truckers who can start their own small businesses. SWTWC will promote those entrepreneurial career pathways by identifying small businesses training opportunities for entry-level and incumbent truckers.

Research Supporting Action Plan 3 (AP3): Promoting Awareness of Trucking Occupation

AP3 Program Summary: To attract the necessary candidates and respond to future needs for heavy and



tractor-trailer drivers, SWTWC will engage state and local education program directors, teachers, counselors, colleges, graduate schools and professional associations to engage underserved populations. SWTWC will emphasize outreach efforts toward: women (a generally underrepresented population in the trucking industry); veterans seeking to break into the workforce; non-native English speakers; and tribal populations who face commuting issues from reservations to the workplace.

AP3 Program Description: Based on SWTWC’s *Job Needs and Priorities Report, Phase 1: Southwest Region*, the “heavy and tractor-trailer drivers” key occupation represents the largest gap in the transportation workforce. In response to this impending need, SWTWC plans to conduct outreach to underserved populations (e.g., tribal populations, women, and veterans) by developing an accessible career pipeline through accredited community colleges and top trucking companies in the region.

AP3 Importance in the Southwest Region: Stakeholders in the Southwest region emphasize the difficulty in attracting and retaining employees in the heavy and tractor-trailer occupation. This is partly due to the competition between public and private transportation organizations. Furthermore, stakeholders have expressed that it is difficult to find employees with necessary technological knowledge, education, training, or certifications beyond high school. Additionally, there exists a general lack of awareness of transportation careers. Stakeholders mentioned that greater outreach and engagement initiatives are needed to raise awareness of career opportunities to students and potential applicants.

AP3 Related Research: The Center’s labor market analysis concluded that the projected demand for heavy and tractor-trailer drivers are estimated to increase by 81,180 employees or 19.5 percent from 2012 to 2022 (Exhibit 6). Further, all states in the region are expected to see a large increase in the number of heavy and tractor-trailer truck drivers during the studied period. This could indicate that efforts to train and recruit these employees would be beneficial across the region. Filling this key occupation will face increasing difficulty due to: a lack of awareness from younger generations, issues with recruiting and retaining drivers, state policies, and private sector competition. This underscores the need to adapt outreach efforts to target non-traditional candidates. For example, the average age of a heavy and tractor-trailer truck driver is 49, compared to 42 for all workers in the U.S. The 2000 Census indicated that individuals aged 21-24 made up only 3.4% of the trucking transportation workforce. In comparison, in 2014 individuals aged 20-24 made up 4.9% of the trucking transportation workforce (Short, 2014). Because the current age requirement to drive a tractor-trailer across interstate lines is 21, transportation organizations are unable to capitalize upon the population of adults transitioning into their first jobs between the ages of 18 and 21. By the time this population reaches age 21, these individuals will have likely already obtained employment in other industries where they can start their careers at a younger age.

Exhibit 6: Occupational Projections for Action Plan 3 Target Occupations					
SOC Code	Occupation Title	# of Employees, 2012	Projected # of Employees, 2022	Change in # of Employees	Percent Change
53-3032	Heavy and tractor-trailer truck drivers	415,400	496,580	81,180	19.5%

Furthermore, the diversity within the trucking occupation requires expansion to help make up for the retiring population of employees. In 2015, 38.6% of heavy and tractor-trailer truck drivers were minorities, which is a strong increase from 26.6% in 2001. Additionally, according to the U.S. Department of Labor, while women make up 47% of the U.S. workforce, they only comprise 6% of all trucking drivers. Additionally, the share of female drivers has not largely moved since 2000 (up just 1.5%). These two populations should be the focus of promotion of the trucking industry as there is great potential to maximize upon the growth in minorities and the untapped population of women drivers.

Research Supporting Action Plan 4 (AP4): Attracting Non-traditional Candidates to the Supply Chain Industry

AP4 Program Summary: To attract the necessary candidates and respond to future needs for supply chain occupations, SWTWC will advance efforts designed to engage various audiences such as state and local education program directors, teachers, counselors, colleges, graduate schools, professional associations, and underserved populations (e.g., women, veterans, tribal populations).

AP4 Program Description: Based on SWTWC's labor market analysis, transportation, storage, and distribution managers, logisticians and freight, stock, and materials movers are identified as key occupations in the Southwest. In response to the impending need to fill these gaps, SWTWC plans to conduct outreach to underserved populations traditionally disconnected from these specific supply chain related jobs such as women, veterans, and individuals speaking English as a second language (ESL). SWTWC will also develop a coalition of key employers through professional supply chain organizations and workforce development committees within the region.



AP4 Importance in the Southwest Region: The region's supply chain management profession is experiencing rapid change and growth. The fast growth has resulted in skill shortages due to a limited workforce pipeline and retention issues across the industry. This is partly due to the fact that transportation organizations must compete with private-sector organizations for employees and increased competition for qualified staff among public sector agencies. To help overcome a delay in filling occupation openings, greater outreach and engagement initiatives are needed to raise awareness of career opportunities to underserved populations and non-traditional

applicants. Expanding recruitment outreach efforts—through partnerships with key stakeholders such as third-party logistics, airport warehousing, cold chain, and farm-to-market organizations—to potential workers who may be unaware of logistics career opportunities will diversify the workforce, multiply the pipeline of skilled applicants, and assist in filling job vacancies with capable workers.

AP4 Related Research: According to SWTWC’s *Job Needs and Priorities Report Phase 1: Southwest Region*, from 2012 to 2022, the projected demand for transportation, storage, and distribution managers are estimated to increase by 4,590 employees (15.5%); logisticians, by 11,900 employees (33.7%); and laborers and freight, stock, and material movers, 117,650 employees (20.1%). However, barriers such as state policies, licensing preventing entry, and industry competition, upset the process of filling critical positions in the supply chain industry. Additionally, there is a lack of diversity in supply chain positions. Only 21.1% of transportation, storage, and distribution managers are women, while 8.2%, 3.4%, and 19.2% are Black or African American, Asian, or Hispanic/Latino, respectively. Hispanic/Latino individuals make up 24.1% of laborers and freight, stock, and material movers, while 17.6% are women, 19% are Black or African American, and 2.9% are Asian. For logisticians, while women make up 40.9% of the workforce, Black or African American, Asian, and Hispanic/Latino employees make up 14.4%, 4.2%, and 20.2%, respectively. The lack of diversity in supply chain occupations may be due to a lack of awareness of career opportunities available, as well as a lack of targeted outreach efforts. The projected increase in demand for supply chain occupations provides transportation employers the opportunity to fill demand by attracting employees in underrepresented populations (see Exhibit 7).

Exhibit 7: Occupational Projections for Action Plan 4 Target Occupations					
SOC Code	Occupation Title	# of Employees, 2012	Projected # of Employees, 2022	Change in # of Employees	Percent Change
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	586,480	704,130	117,650	20.1%
13-1081	Logisticians	35,330	47,230	11,900	33.7%
11-3071	Transportation, Storage, and Distribution Managers	29,610	34,200	4,590	15.5%

V. Stakeholder Partnerships to Support the Action Plans

For each action plan, the Center will collaborate with relevant partners to promote and implement the initiatives and programs in organizations across the region. This will help gain buy-in and raise awareness of the needs and potential mutual benefits of the workforce programs. Specifically, the Center will work with partners in committees to develop marketing materials, conduct outreach, and ensure the program is successful in achieving its outcome. The Center will also leverage the partners’ networks to effectively identify the target audience for outreach.

Additionally, having partners serve as champions of the program will enable the Center to better communicate with the target audience for each action plan. Partners include academic institutions and public and private sector organizations. Exhibit 8 provides an overview of potential partners for each action plan.

Exhibit 8: Southwest Region Potential Partners	
Action Plan	Partners
Action Plan 1: Promoting Apprenticeship Programs for the 21 st Century	<ul style="list-style-type: none"> ▪ U.S. Chamber of Commerce ▪ L.A. Trade and Technical College ▪ Kuehne + Nagel
Action Plan 2: GIS Tribal Training Initiative	<ul style="list-style-type: none"> ▪ Esri ▪ Native American Transportation Issues Committee of the Transportation Research Board ▪ Choctaw Nation of Oklahoma Cultural Services and GIS and GPS Specialist ▪ Experts in education initiatives in tribal areas
Action Plan 3: Promoting Awareness of Trucking Occupation	<ul style="list-style-type: none"> ▪ SWTWC's Action Subcommittees ▪ Pima Community College, Arizona ▪ Schneider National
Action Plan 4: Attracting Non-traditional Candidates to the Supply Chain Industry	<ul style="list-style-type: none"> ▪ SWTWC's Action Subcommittees ▪ Council of Supply Chain Management Professionals (CSCMP)

VI. Action Plans to Address Identified Skill Needs

Action Plans serve as a strategic, high-level roadmap for outlining implementation strategy. While they do not describe in detail how the strategy will be implemented, the Action Plan will provide direction and critical considerations for implementation. To provide a complete picture on requirements for piloting and implementing the programs, the action plans consist of multiple sections, as described in Exhibit 9. Full action plans are provided in Appendix B.

Exhibit 9: Overview of Data Fields in Strategic Action Plans	
Data Field Name	Description
Section 1: Overview of Strategic Recommendation	
Summary	<ul style="list-style-type: none"> ▪ Provides a short description of strategic recommendation. ▪ Includes overview of key points of interest from the full Strategic Action Plan.

Exhibit 9: Overview of Data Fields in Strategic Action Plans	
Data Field Name	Description
Description	<ul style="list-style-type: none"> Provides broad overview of proposed recommendation. Indicates the type of effort being described (e.g., recruitment, retention). Describes the level at which the recommendation should be implemented.
Importance to SW Region	<ul style="list-style-type: none"> Provides a rationale for the recommendation based on research findings, specific to the Southwest region.
Relevant Research	<ul style="list-style-type: none"> Provides specific data points and results of research that have been considered in the development of the program.
Section 2: Target Audiences	
Target Audience	<ul style="list-style-type: none"> Identifies the key person(s) within the agency who are accountable for developing and managing the appropriate action plan, including carrying out the specific implementation steps. Identifies the key person(s) who should be contacted in order to implement the practice and stakeholders with whom to coordinate.
Relevant Positions	<ul style="list-style-type: none"> Provides a graphic depiction of the anticipated target jobs impacted as a result of proposed recommendation and target career stages.
Section 3: Implementation Plan	
Steps to Implement	<ul style="list-style-type: none"> Presents the key steps that should be followed, in order to successfully implement the practice.
Section 4: Communication Plan	
Communication/Outreach Strategies	<ul style="list-style-type: none"> Describes communication and outreach strategies that will help ensure successful implementation.
Process for Obtaining Buy-In	<ul style="list-style-type: none"> Describes the critical steps and processes that will assist agency in getting senior leadership to champion the practice.
Section 5: Useful Internal and External Resources	
Useful Internal and External Resources	<ul style="list-style-type: none"> Identifies the internal and external resources that will assist in implementing the practice including groups or stakeholders that will need to be involved in implementation. Identifies the internal and external resources that will assist in successfully sustaining the practice.
Section 6: Example of Effective Programs	
Example(s) of Existing Effective Program	<ul style="list-style-type: none"> Provides bulleted examples of effective programs that have been successfully implemented and practiced in a transportation organization.
Section 7: Expected Impact	

Exhibit 9: Overview of Data Fields in Strategic Action Plans	
Data Field Name	Description
Positive Outcomes of the Practice	<ul style="list-style-type: none">▪ Describes anticipated results of the practice with full adherence to the implementation steps. The impact information may include findings from research studies and/or anecdotal evidence from implementing agencies.

VII. Conclusion

By defining the region's priority occupations and developing action plans, the Job Needs and Priorities Research Effort provided for a coordinated, strategic, and structured approach to transportation workforce development at the regional, state and local levels. The products will help to focus the work of the Center going forward and guide its interactions with the Center's public- and private-sector stakeholders. Through partnership, the Center can work with the transportation, education, workforce investment, and labor/union communities throughout the region to address pressing workforce challenges related to these key occupations. This collaborative approach will be important to the success of transportation workforce development and to the efficiency and effectiveness of the region's transportation system. This focus will also ensure the region's workforce development efforts, particularly around these 13 critical occupations, are meeting the needs of the industry as these careers continue to become more complex and technologically advanced.

VIII. Appendix A: Interview Protocol

Introduction and Overview

The goal of the Southwest Transportation Workforce Center is to enhance transportation workforce development activities in the region. The Center is part of a network of five regional centers that cover the entire U.S and is funded by FHWA. We are currently working to identify priority occupations and skill sets as well as other workforce issues that are important in the region and therefore would benefit from additional focus in our Center activities.

Previously, our team identified occupations within the transportation workforce in the Southwest that would benefit from additional workforce development focus. Based on the information learned through previous literature reviews, research, and interviews, we have also started to develop Action Plans to address workforce challenges facing transportation organizations in the Southwest. **The goal of today's interview is to gather your thoughts and input about these Action Plans so that we can further develop and refine them in support of employer initiatives across the region.**

Interview Questions

Background

1. Can you provide a brief overview of your organization and its mission in the transportation industry?
2. Could you tell us about your role within your organization as well as your work in or relationship to transportation workforce development?

Selection of Action Plans to Cover in Interview

3. Prior to this interview, you should have received a document that provides an overview of the four action plans that are being developed as focus areas for progress in the Southwest. What are your overall impression of the types of action plans that are being developed? How helpful will these be for addressing workforce issues within transportation across the region?
4. To best focus our discussion today, we would like you to identify the 2-3 action plans that are of particular interest to you and where you feel you have the most input or feedback. Of the following, where would you like to focus?
 - a. Action Plan 1: Promoting Apprenticeship Programs for the 21st Century
 - b. Action Plan 2: GIS Tribal Training Initiative
 - c. Action Plan 3: Promoting Awareness of Trucking Occupation
 - d. Action Plan 4: Attracting Non-traditional Candidates to the Supply Chain Industry

Action Plan Review and Discussion- for each Action Plan Selected for review

5. Does the description of this action plan and its intended audiences make sense in the context of the transportation industry across the region?

- a. What is unclear or could use additional clarification in describing the action plan or its intended audiences?
 - b. If it is successfully implemented, will this action plan make a significant difference in addressing workforce issues in the industry?
6. Going forward, how can we best update and project Labor Market Information (LMI) related to the Action Plans, including supply of candidates from different backgrounds and demand for these jobs among employers?
7. What examples of an action plan or strategy like this have you seen implemented, either within your organization or at another?
 - a. What steps were particularly important for effective implementation?
 - b. What benefits have been experienced as an outcome of implementing a strategy like this?
 - c. If your organization has not done anything like this, are there any particular reasons why you have not?
8. In thinking about communications around the implementation of a strategy such as this, who would be most important to engage to ensure that there is buy-in to the process?
 - a. What types of outreach would be necessary within your organization and across the region to ensure widespread implementation? With whom?
9. What do you see as barriers to effective implementation of a plan like this?
 - a. What types of challenges are most likely to be experienced in implementing or maintaining a strategy like this?
10. What advice would you give for implementing an action plan such as this?
 - a. What would increase the probability of successful implementation of this action plan across the region?

Summary

Do you have recommendations for other stakeholders or organizations we should engage, who would have valuable input on any of the action plans described?

Looking Toward Phase 3 of Labor Market Analysis

11. Can you recommend any ideas for follow up action plans for phase 3 of SWTWC's labor market analysis?
12. Please list any research methods, strategic stakeholder groups, or software that would prove helpful in forecasting labor market trends, skills gaps and new occupations in the over the next 5-15 years.

IX. Appendix B: Full Strategic Action Plans

Action Plan 1: Promoting Apprenticeship Programs for the 21st Century

Summary: Promote apprenticeship programs that will attract new employees to develop a qualified workforce for the priority occupations in the Southwest transportation workforce. These outreach efforts directly engage public- and private-sector employers, and target K-12, technical school, community college, four-year college, graduate school, and incumbent workforce audiences.

Description: At the 2012 Council of University Transportation Centers, attendees at the National Transportation Summit discussed four major challenges to the transportation workforce: demographic changes, career awareness/recruitment, new technologies, and the increasing demand for a workforce with a wider range of skills and experiences. SWTWC built upon those 2012 insights with further engagement with industry and academic stakeholders, which confirmed the need for apprentice programs to bridge the gap between the academic continuum and the professional world. In response to these challenges, SWTWC recommends implementing a series of web seminars (or webinars) titled “Apprentice Programs for the 21st Century” where attendees can learn and participate in real-time online discussions about apprentice programs available throughout various transportation sectors. Webinars will include information on development methodology and implementation best practices. Although these webinars are primarily targeted at companies to create and implement apprenticeship programs, they will double as invaluable resources for students entering the workforce to learn about available opportunities and next steps. Ultimately, these webinars will: highlight successful apprentice programs, share implementation best practices, share engagement and recruitment strategies, provide industry leading speakers, and promote valuable opportunities within transportation. SWTWC will archive those webinars on its transportation workforce data clearing house and on its YouTube channel.



Importance in the Southwest Region: SWTWC’s *Job Needs and Priorities Report Phase 1: Southwest Region* identified jobs in the region that are critical to the transportation industry, increasing in the number of jobs/demand, and in need of a workforce focus. Many of these jobs could potentially benefit from greater participation in apprenticeship programs. By hosting webinars, SWTWC will be able to cost-effectively disseminate information to a large, diverse audience of potential employees while enabling the entering workforce to connect skill sets to specific jobs from industry leaders. The webinars will also eliminate travel and scheduling barriers since participants can attend remotely and asynchronously. Finally, the series of webinars will prioritize a discussion about transportation workforce needs.

Relevant Research: SWTWC is in an important position to spearhead marketing and dissemination efforts to increase attraction to and participation in apprenticeship programs across the region. First, these webinars can attract new employees by highlighting career opportunities and benefits for individuals who complete apprenticeships. For example, research conducted on apprenticeship programs in ten states indicates that those who participate in apprenticeship

programs earn an average of \$98,718 more over the course of their career than those who do not participate. Furthermore, those who participate in and complete an apprenticeship program earn an average of \$240,037 over the course of their career compared to those who do not participate (Reed et al., 2012). These webinars can also highlight benefits for employers who may be interested in developing and implementing apprenticeship programs. For example, investing in apprenticeships can save organizations recruitment and training costs, given that employees can be more accurately placed in positions that match the knowledge and skills gained in the apprenticeship. As a result, these programs help employers to reduce skill gaps. In a study consisting of 900 organizations with apprenticeship programs, approximately 90% of organizations reported they would highly recommend apprenticeship programs to others, as the programs helped meet skill demands and reduce gaps (Lerman et al., 2009).

Second, increasing awareness of apprenticeships for priority occupations can help to fill demand for those occupations. As displayed in Exhibit 10 below, the projected increase in demand for the six targeted occupations for this action plan range from 15.5% for transportation, storage, and distribution managers to 33.7% for logisticians.

Exhibit 10: Occupational Projections for Action Plan 1 Target Occupations					
SOC Code	Occupation Title	# of Employees, 2012	Projected # of Employees, 2022	Change in # of Employees	Percent Change
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	64,290	75,060	10,770	16.8%
13-1081	Logisticians	35,330	47,230	11,900	33.7%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	586,480	704,130	117,650	20.1%
47-2073	Operating Engineers and Other Construction Equipment Operators	91,940	112,720	20,780	22.6%
17-3031	Surveying and Mapping Technicians	16,750	20,270	3,520	21.0%
11-3071	Transportation, Storage, and Distribution Managers	29,610	34,200	4,590	15.5%

Given the high demand for these occupations, transportation employers in the region must be able to effectively conduct outreach to a large audience. Because webinars can be attended remotely, they will provide employers the opportunity to do so, potentially attracting a larger number of employees to meet the growing demand. Additionally, it is becoming increasingly important for transportation agencies to be able to effectively recruit millennials and younger generations entering the workforce. In 2014, the average age of employees for the six targeted occupations in this action plan was over 40 years, with the exception of bus/truck mechanics and diesel engine specialists. As such, these webinars can potentially attract members of the new developing workforce.

Action Plan 1: Promoting Apprenticeship Programs for the 21st Century



Target Audiences

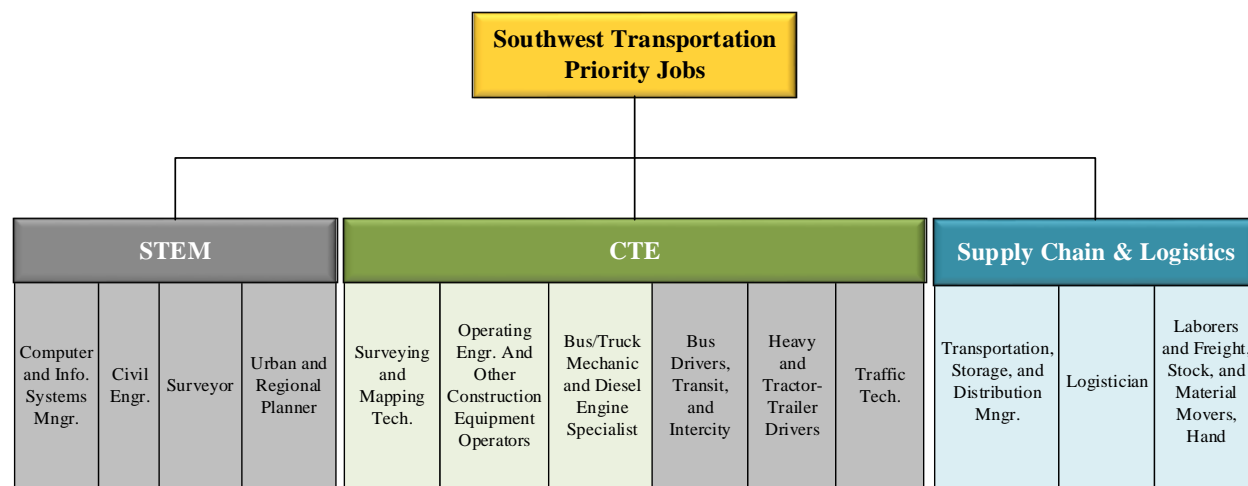


Action Plan 1: Promoting Apprenticeship Programs for the 21st Century

Apprenticeships are valuable programs because they benefit multiple parties. This recommendation can be implemented for any target transportation occupation; however, it may be most appropriate for established companies and organizations in various transportation sectors. Target audiences may include: K-12, technical school, community college, four-year college, graduate school, and incumbent workers seeking professional development.



Relevant Positions



Implementation Plan



Action Lead(s): SWTWC will be responsible for leading the effort of coordinating interested parties and identifying opportunities for apprenticeships that will benefit the transportation industry. This will include beginning to develop plans for apprenticeship program development. For apprenticeship programs implemented by individual organizations or agencies, an HR or training director should be responsible for the oversight of these programs. Alternatively, labor unions, community colleges, or other professional organizations can create these programs independently or in association with other organizations. In this case, an apprenticeship program coordinator should be appointed.

Steps to Implement

1. Assemble an Action Subcommittee.

- Create a team of industry leaders and experts to steer and advise SWTWC in developing and implementing a series of webinars titled “Apprentice Programs for the 21st Century.”

2. Identify and Network with Partners.

- Leverage Action Subcommittee’s network to identify and connect with partners such as: the U.S. Chamber of Commerce, American Public Transportation Association (APTA), Schneider National, Kuehne + Nagel, Transportation Workforce Institute, Advanced Transportation and Manufacturing, Los Angeles Trade and Technical College, Long Beach City College, and California State University, Long Beach. Partners will discuss the mutual benefits of featuring successful apprenticeship programs in the Southwest

Action Plan 1: Promoting Apprenticeship Programs for the 21st Century

region while sharing best practices in program implementation and student recruitment.

- SWTWC will coordinate with different program directors or administrators in different sectors within transportation to host a series of webinars by sector. This step also involves establishing expectations, developing engaging webinar content, rehearsals, and organization (i.e., number of webinars in the series, date, time, duration, and registration dates for each webinar, and webinar platform), and discussing a plan for marketing and outreach.

3. Develop Marketing Strategy.

- Develop a marketing plan and produce materials to promote the series of webinars (e.g., social media posts, flyers, video testimonials).
- Provide online invitations featuring speakers, programs, and organizations to hook audiences, in addition to take-away materials for webinar participants and speakers (e.g., downloadable contact, program information, and feedback surveys).

4. Recruit DOT Participants and Develop Government Incentives for Apprenticeship Programs.

- Demonstrate the positive impact of the webinar series on the transportation industry in regard to training and recruitment to relevant agency employees at various levels of transportation. This highlights the importance of both apprenticeship programs and career pipelines regarding ease of entry into transportation. This also encourages further development of state incentives, support for training programs, and industry leaders to develop apprenticeship programs.

5. Follow-Up with speakers and participants.

- Based on results from feedback surveys after each webinar, make the necessary adjustments to improve and meet the needs of participants in the next webinar.
- After the closing webinar in the series, identify further workforce needs for developing apprenticeship programs and follow-up with organizations who will be implementing apprenticeship programs in the future.



Communication Plan



Communication/Outreach Strategies: In order to communicate and promote the webinar series effectively, SWTWC will leverage the Center's growing network of stakeholders in transportation to reach relevant target audiences and market the benefits of apprenticeship programs. To ensure that outreach and communication efforts are implemented as strategically as possible, SWTWC will:

- Develop targeted marketing strategies and materials specific to each organization (e.g., e-invites for high school students subscribed to Fast Forward, promoting the webinar series in a workforce development feature on METRANS via their newsletter or TransCast, and presenting the webinar as a networking opportunity through the Center for International Trade and Transportation Newsletter LinkedIn group).
- Conduct outreach at transportation career fairs and conferences that are suited for

Action Plan 1: Promoting Apprenticeship Programs for the 21st Century

outreach efforts.

- Contact programs and organizations planning apprenticeship programs, and seizing opportunities for potential partnerships.

Process for Obtaining Buy-In

- Identify and partner with relevant industry organizations.
- Share the benefits of outreach of apprenticeships to all relevant groups (i.e., industry, employers, employees) so that the many benefits are apparent.



Useful Internal and External Resources



- **Data and Metrics from Webinars:** Utilizing data and metrics in regards to registration, attendance, and engagement for each webinar, SWTWC can identify outreach best practices for specific targeted audiences. In addition, using feedback surveys, SWTWC can identify both employer and employee needs while documenting methods of retention and recruitment for developing apprenticeship programs.
- **Examples of Successful Programs:** Exemplary apprenticeship programs and resources will be added to SWTWC's compendium of education and training programs and resources. Understanding the success of other programs can also emphasize the benefits that will be experienced by the organization when promoting implementing an apprenticeship program.
- **Data on Developing Apprenticeship Programs:** The Center will maintain data on developing apprenticeship programs while being a resource for opportunities to connect the program with other organizations.



Examples of Effective Programs



At the time of writing this action plan, SWTWC Associate Director Tyler Reeb is conducting outreach to program directors and administrators from APTA, the U.S. Chamber of Commerce, L.A. Trade and Technical College, Schneider National, and Kuehne + Nagel regarding the development of a series of webinars titled "Apprentice Programs for the 21st Century." Thus far, Reeb is following up with Jess Guerra, Director of the Transportation Workforce Institute and Chair for the Advanced Transportation and Manufacturing at the L.A. Trade and Technical College to be a speaker in the first webinar of the series which will provide an overview of apprenticeship programs available in various sectors within transportation.



Expected Impact



Expected Positive Outcomes of the Practice

- Transportation industry
 - Increased availability of qualified employees for technical or specialized employees

Action Plan 1: Promoting Apprenticeship Programs for the 21st Century

- Boosts competitiveness in the global economy
 - Promotes career paths to attract and retain employees within transportation
 - Transportation organizations
 - Ability to attract individuals into needed positions
 - Decreased turnover and absenteeism
 - Increased employee productivity
 - Develops stable pipeline of reliable talent
 - Increased employee loyalty from apprentices and those completing apprenticeships
 - College/technical students
 - Ability to train for a job while actually on that job and receiving pay and benefits
 - Increased wages for employees who complete apprenticeship programs
 - Recognition as a qualified journey worker or technical employee, increasing employability
 - Often includes reduced tuition for education that occurs during the apprenticeship
 - Includes hands-on-career training, that is relevant and often nationally recognized
-

Action Plan 2: GIS Tribal Training Initiative

Summary: This action plan focuses on developing a training program that engages tribal populations interested in a career with Geospatial Information Systems (GIS) skills that can be used to build a cadre of skilled GIS professionals in tribal populations. Secondly, this action plan will result in data collection opportunities for road safety, transportation, and culture metrics within particular regions of interest.

Description: The formation of a GIS training initiative for tribal populations will have both educational and economic merit. First, the training could help foster new career pipelines for both urban and rural tribal youth wishing to enter the workforce beyond their respective communities. Second, the initiative will help capture data relating to road safety, transportation, and cultural metrics within tribal lands.



Importance in the Southwest Region: Priority transportation occupations were identified in the Southwest region to determine beneficial areas in which to invest resources into workforce development. Due to rapidly progressing technology, the skills within these occupations are constantly changing, meaning there is a continuous high demand for individuals in these fields with new skills to enter the industry. The technical expertise that comes with these occupations is vital to the industry, particularly with regards to the increasing use of GIS and ITS. For example, civil engineers, Surveyors, and Urban and Regional Planners are increasing needs for GIS skills and, as such, are ideal candidates for skills analysis and skills-based training programs. Skill-based training that helps future and current employees close performance gaps is a critical step to the continued and future success of the transportation workforce.

Relevant Research:

GIS skills will increasingly be required for a range of critical transportation occupations identified in SWTWC labor market analysis. From 2012-2022, employment of surveyors is expected to increase 14.1%, urban and regional planners by 16.8%, traffic technicians by 11.3%, and surveying and mapping technicians by 21%. The high demand increase means that the transportation industry needs to expand skills in underrepresented populations to sufficiently meet future demands. The demographic profile of the surveying and mapping technician occupation demonstrates potential in expanding a diverse workforce. In 2015, only 5.2% of surveying and mapping technicians were women. Furthermore, minority populations are greatly underserved in career and technical education (CTE) occupations. For the survey and mapping technician occupation, in 2015 only 3.5% were Black or African American, 4.1% were Asians and those of Hispanic or Latino ethnicity were 7.2%. According to analyses conducted by the Bureau of Labor Statistics, the American Indian race is represented extremely minimally, if at all.

Action Plan 2: GIS Tribal Training Initiative



Target Audiences



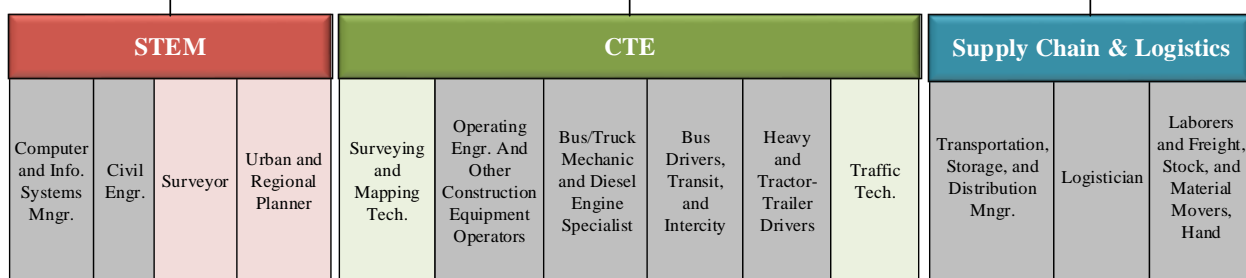
This recommendation can be implemented into tribal populations throughout SWTWC's eight-state region. Since the initiative focuses on tribal youth populations, high schools associated with the Bureau of Indian Education (BIE) can target the K-12 population within their respective communities. Community colleges that serve these communities may also act as platforms to host the training programs.



Relevant Positions



Southwest Transportation Priority Jobs



Implementation Plan



Action Lead(s): SWTWC will lead the identification of GIS-specific skills and subsequent training program development for urban and rural tribal youth. Transportation organizations across the region will then be responsible for ensuring that employees gain the needed GIS skills and are proficient in their use.

Steps to Implement

1. Assemble an Action Subcommittee.

Create a team of industry leaders and experts to steer and advise SWTWC to develop and implement GIS training modules.

2. Identify and Network with Partners.

Leverage the SWTWC Action Subcommittee's network to identify and connect with partners such as: Esri, Trimble, Southern Plains Tribal Technical Assistance Program, and Mountain West Tribal Technical Assistance Program. This step includes SWTWC coordinating with program directors and/or administrators from technology providers and tribal workforce development groups to plan, develop, and implement GIS training modules. For instance, Esri may help SWTWC develop the curriculum for the training modules while Trimble may donate GPS hardware and provide field training for students.

Action Plan 2: GIS Tribal Training Initiative

3. Develop training modules.

In full collaboration with partners, SWTWC will develop training modules by confirming curriculum and skill training. This includes developing a training program plan which will help partners prioritize and select those competencies for training and developing materials to support students' success in the program.

4. Develop a marketing strategy for implementation.

- Develop a marketing plan with materials to promote the GIS training modules to a targeted audience. The plan will include building relationships with regional educational centers and working investment boards.
- Develop materials such as: social media posts; flyers; presentations; and video testimonials to promote GIS training modules.

5. Implement training modules, record data, and improve program.

- Implement training modules and develop a methodology to collect and analyze feedback data (e.g., student enrollment, graduation rate, challenges, successes, and student needs to succeed).
- Identify training program minimum specifications.
- Develop training plan/recommendations.
- Partner with an organization to create and deliver the training programs.
- Identify organizations to pilot the training program.
- Critically review modules based on data collected to identify best practices and optimization.
- Partner with organizations to evaluate success of training program and fidelity to training program plan.
- Conduct training program improvements based on results of fidelity assessment.

6. Share success of the program and recruit DOT Participants.

- Demonstrate the impact of GIS training modules on skill transfer and recruitment to relevant stakeholders.
- Partner with an organization to conduct job/task analysis of the occupation to identify skills needed for successful performance.



Communication Plan



Communication/Outreach Strategies

- Starting Spring of 2016, SWTWC will work alongside the consortium in establishing relationships with relevant program partners recommended by Steering Committee members and other strategic tribal stakeholders.
- SWTWC should identify partners and stakeholders within organizations who could act as

Action Plan 2: GIS Tribal Training Initiative

champions for the training initiative. Ideal champions can motivate and inspire others, and demonstrate excellent problem solving and communication skills. For example, champions can be members of the transportation workforce, human resource training personnel, and/or partner/organizational leadership.

- SWTWC will communicate the background of the project, its importance to the transportation industry, a description of the tasks associated with the project, roles and responsibilities of SWTWC, stakeholders and partners, the expected outcomes of the initiative, recommended project schedule, and any additional information necessary.
- SWTWC will create sample key messages that should be relayed to organizations to foster cooperation, understanding of the initiative, and buy-in, as well as talking points for senior leadership and front-line supervisors who will implement the training.
- Communications should be segmented and customized to represent varying needs within tribal audiences, answering the questions that specific audiences care about, and choosing the most appropriate time to do so

Process for Obtaining Buy-In

- Use strategic, targeted communications that build knowledge, address real business concerns, and showcase improved business operations using redesigned training programs to move stakeholders from awareness to commitment.
- Use the communication plan to build buy-in for implementation. Outline: 1) the rationale and business case for the training program, 2) the plan for training program that includes a recommended timeline for the transition to the skill-based training, 3) an explanation of how this is different than current operations, and 4) answers to frequently asked questions.
- Share the priority jobs that are being targeted (and why) with other regional transportation centers. This will help gain buy-in by showing the need for the development of skills in the current workforce.
- Provide partners with the support SWTWC.
- Showcase results of the program to build interest for future implementation.



Useful Internal and External Resources



- Terry Bills, Esri Global Transportation Industry Director and SWTWC Steering Committee member, will ensure the training initiative has the technical- and industry-wide support through the development of the training design for the modules. Additionally, Kevin Gabelman and Tyler Reeb of SWTWC will coordinate with Teresa Dameron (an expert in education initiatives in tribal areas) in incorporating technical skill development, career training, and soft skills.
- Tribal workforce leaders such as Karla Sisco and Ron Hall, chair of the Native American Transportation Issues Committee of the Transportation Research Board, will assist in relaying the components of the initiative to the appropriate demographics.

Action Plan 2: GIS Tribal Training Initiative



Examples of Effective Programs



- SWTWC is currently conducting outreach with Tribal GIS and other organizations that have a proven track record.



Expected Impact



Expected Positive Outcomes of the Practice

- In addition to informing training requirements, results of skill gap assessments can be used to identify, reduce, and eliminate employees' performance gaps. The results can also facilitate employee goal formation and subsequent career advancement by pinpointing specific opportunities for growth and correction.
- By conducting a needs analysis, organizations can have a true understanding of the types of skills necessary to perform on the job. With this information, they will be able to effectively train employees and improve performance in a changing transportation environment.
- A clear picture of employee skill needs will be identified, which will serve to train the current workforce as well as identify qualified job candidates in the future.
- Having a skills-based training program will help organizations prepare for retirements by shifting knowledge and expertise from the retirement-eligible to the succession-eligible.
- Staff satisfaction can increase when employees feel like their organization is investing in them and preparing them to be successful on the job.

Action Plan 3: Promoting Awareness of Trucking Occupation

Summary: To attract the necessary candidates and respond to future needs for heavy and tractor-trailer drivers, SWTWC will engage state and local education program directors, teachers, counselors, colleges, graduate schools, professional associations, and underserved populations (e.g., women, veterans, tribal populations).

Description: Based on SWTWC's *Job Needs and Priorities Report, Phase 1: Southwest Region*, the "heavy and tractor-trailer drivers" key occupation represents the largest gap in the transportation workforce. In response to this impending need, SWTWC plans to conduct outreach to underserved populations (e.g., tribal populations, women, and veterans) by developing an accessible career pipeline through accredited community colleges and top trucking companies in the region.



Importance in the Southwest Region: Stakeholders in the Southwest region emphasize the difficulty in attracting and retaining employees in the heavy and tractor-trailer occupation. This is partly due to the competition between public and private transportation organizations. Furthermore, stakeholders have expressed that it is difficult to find employees with necessary technological knowledge, education, training, or certifications beyond high school. Additionally, there exists a general lack of awareness of transportation careers. Stakeholders mentioned that greater outreach and engagement initiatives are needed to raise awareness of career opportunities to students and potential applicants.

Related Research: The Center's labor market analysis concluded that the projected demand for heavy and tractor-trailer drivers are estimated to increase by 81,180 employees or 19.5 percent from 2012 to 2022. Further, all states in the region are expected to see a large increase in the number of heavy and tractor-trailer truck drivers during the studied period. This could indicate that efforts to train and recruit these employees would be beneficial across the region. Filling this key occupation will face increasing difficulty due to: a lack of awareness from younger generations, issues with recruiting and retaining drivers, state policies, and private sector competition. This implies the need to adapt outreach efforts to target non-traditional candidates. For example, the average age of a heavy and tractor-trailer truck driver is 49, compared to 42 for all workers in the U.S. The 2000 Census indicated that individuals aged 21-24 made up only 3.4% of the trucking transportation workforce. In comparison, in 2014 individuals aged 20-24 made up 4.9% of the trucking transportation workforce (Short, 2014). Because the current age requirement to drive a tractor-trailer across interstate lines is 21, transportation organizations are unable to capitalize upon the population of adults transitioning into their first jobs between the ages of 18 and 21. By the time this population reaches age 21, these individuals will have likely already obtained employment in other industries where they can start their careers at a younger age.

Furthermore, the diversity within the trucking occupation requires expansion to help make up for the retiring population of employees. In 2015, 38.6% of heavy and tractor-trailer truck drivers

were minorities, which is a strong increase from 26.6% in 2001. Additionally, according to the U.S. Department of Labor, while women make up 47% of the U.S. workforce, they only comprise 6% of all trucking drivers. Additionally, the share of female drivers has not largely moved since 2000 (up just 1.5%). These two populations should be the focus of promotion of the trucking industry as there is great potential to maximize upon the growth in minorities and the untapped population of women drivers.

Action Plan 3: Promoting Awareness of Trucking Occupation



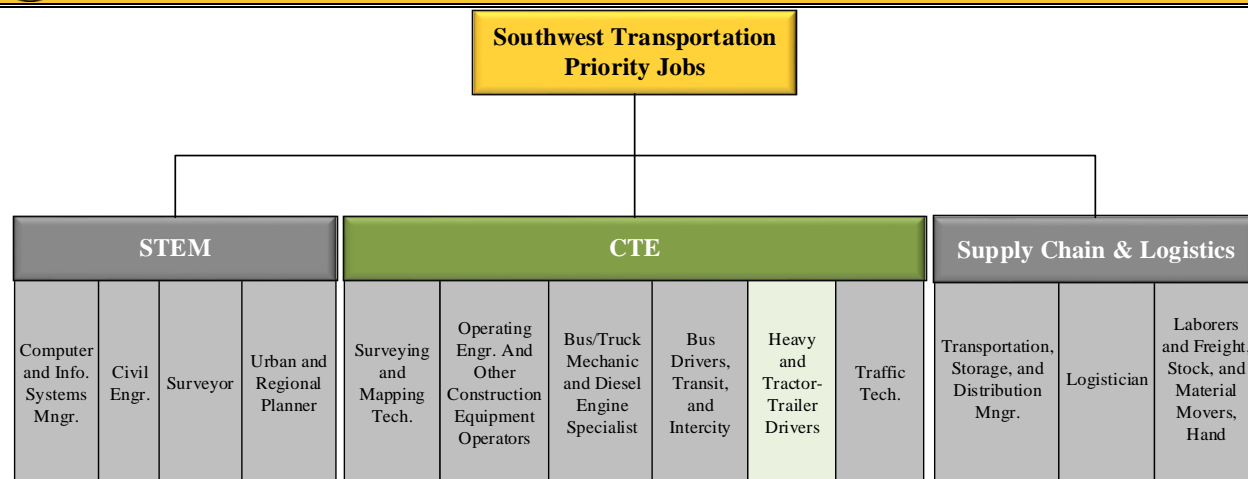
Target Audiences



SWTWC is focused on reaching out to underserved populations, particularly veterans who have the option to substitute two years of military driving experience for the skills portion of the commercial license test. However, this recommendation can be implemented for any target transportation occupation. Target career stages may include: K-12, technical school, community college, four-year college, graduate school, and incumbent workforce audiences.



Relevant Positions



Implementation Plan



Action Lead(s): SWTWC in concert with a dedicated committee of industry stakeholders.

Steps to Implement

1. Assemble an Action Subcommittee, and conduct outreach.

- Create a team of industry leaders and experts to steer and advise SWTWC in program development and organization.
- Leverage the following SWTWC connections to conduct established best practices in outreach to underserved communities: Pima Community College Chancellor Lee Lambert's partnership with local tribal schools; Mountain West Tribal Technical

Action Plan 3: Promoting Awareness of Trucking Occupation

Assistance Program (TTAP) Coordinator Morgan Ross and Southern Plains TTAP Manager Karla Sisco's connections within tribal communities; METTRANS Assistant Director Victoria Deguzman's association with Women's Transportation Seminar, Los Angeles; Schneider Employment Network Development Director Grailing Jones' military contacts; and South Bay Workforce Investment Board CEO Jan Vogel's reach in various communities and organizations across the Southwest region).

2. Identify and Network with Partners.

- Identify and network with partners in education and training programs and leading industry organizations to discuss the mutual benefits of developing a career pipeline into trucking for students.
- Plan a meeting between program directors and facilitate discussion regarding program curriculum and agreements between the training program and industry organization. This meeting will involve establishing expectations, significant training program details (e.g., location and duration of training, expected enrollment, and graduation), and discussion of a plan for marketing and outreach to targeted audiences for the training program.

3. Develop an Outreach Plan.

Develop a strategy to connect and disseminate information about the career pipeline for heavy and tractor-trailer drivers to underserved populations. This includes: addressing the needs and concerns of potential students, connecting to community leaders and influential organizations within those communities, and outreach materials (e.g., presentations, flyers, videos, testimonials, and website).

4. Recruit DOT Participants and Develop Further Incentives.

Identify agency employees in transportation jobs across various levels and functions willing to work towards developing incentives (e.g., scholarships, grants, apprenticeships, internships, opportunities). For example, additional support could be provided to pay for schooling and business ventures in trucking and transportation. Another example includes opportunities to transfer into careers or training programs where students may build upon their skills and knowledge gained from becoming heavy and tractor-trailer drivers in transportation.

5. Follow-Up with Partner.

- After development and implementation of the program, follow-up with program directors from the training program and employment agency.
- Discuss the number of students in the training program, needs of the students, educators, and employers, and the possibility of further expanding the partnership.



Communication Plan



Communication/Outreach Strategies

It is crucial that SWTWC identify best practices to market the career pipeline into trucking for tribal populations, women, and veterans. This may include community leaders, organizations, associations, specific magazines/publications, blogs/websites, and conferences. Alternative venues such as career seminars, workshops, and events that reach high school students may also

Action Plan 3: Promoting Awareness of Trucking Occupation

be well-suited for outreach efforts. For example, an outreach plan can help build buy in for implementation by outlining 1) the rationale and business case for the change; 2) the plan for change that includes a timeline for the transition to the needs-based training; 3) an explanation of how this is different than current operations; and 4) answers to frequently asked questions.

Additionally, the following elements should be included in any outreach communication: the background of the project, its importance to the organization, why it is being undertaken, a description of the tasks associated with the project, support required from personnel, the expected outcomes of the initiative, the project schedule, and any additional information deemed relevant.

Process for Obtaining Buy-In

Use strategic, targeted communications that build knowledge, address real business concerns, and showcase improved business operations using redesigned training programs to move stakeholders from awareness to commitment and buy-in.



Useful Internal and External Resources



By thorough documentation and analysis of the career pipeline development process, SWTWC will identify both best practices and barriers. The Center will use this information as a model to create other transportation career pipelines for the twelve other key occupations identified in *Job Needs and Priorities Report, Phase 1: Southwest Region*.

Additionally, SWTWC will leverage its Action Subcommittees to ensure that the training and education program addresses industry needs while continuing to garner support from both educators and leaders in transportation.

SWTWC will also maintain data as to which career pipelines are most successful and why. SWTWC will also determine whether the programs meet the needs of the abovementioned underserved populations. Lastly, the Center will identify areas for improvement through feedback from students, educators/trainers, and employers.



Examples of Effective Programs



Chancellor Lee Lambert for Pima Community College, Arizona is a member of SWTWC's Steering Committee and the Career and Technical Education Action Subcommittee. Pima Community College has an active Commercial Driver's License certification program where students can learn basic truck, bus and coach driving skills, and test for their Class A driving license. This enables students to become heavy and tractor-trailer drivers. Grailing Jones, Director for Schneider Employment Network Development, agreed to give graduates from Pima's certification program priority for career opportunities within Schneider National, a multi-national trucking company with services spanning transportation and supply chain logistics and management.

Action Plan 3: Promoting Awareness of Trucking Occupation



Expected Impact



Expected Positive Outcomes of the Practice

Completing this action plan will have positive impacts in increasing career awareness and the number of employees in trucking. First, it will enhance the understanding of availability and potential for heavy and tractor-trailer driver career opportunities. It will allow organizations to present opportunities of heavy and tractor-trailer occupations in a way that drives interest and increases positive perception of transportation jobs and career opportunities in non-traditional employees. Efforts will likely result in a larger pool of suitable applicants. Second, it will facilitate greater understanding in the community of the agency's services and mission, and awareness of the value transportation organizations bring to the region.

Action Plan 4: Supply Chain Diversity

Summary: To attract the necessary candidates and respond to future needs for supply chain occupations, SWTWC will advance efforts designed to engage various audiences such as state and local education program directors, teachers, counselors, colleges, graduate schools, professional associations, and underserved populations (e.g., tribal populations, women, veterans, non-native English speakers, among others).

Description: Based on SWTWC's labor market analysis, transportation, storage, and distribution managers, logisticians and freight, stock, and materials movers are identified as key occupations in the Southwest. In response to the impending need to fill these gaps, SWTWC plans to conduct outreach to underserved populations traditionally disconnected from these specific supply chain related jobs such as women, veterans, tribal populations, and individuals speaking English as a second language (ESL). SWTWC will also develop a coalition of key employers through professional supply chain organizations and workforce development committees within the region.



Importance in the Southwest Region: According to stakeholders in the Southwest region, it is difficult to attract and retain employees in the transportation industry, particularly within supply chain occupations. One major challenge related to employee retention is the reality that supply chain employers must compete with companies from other industries for employees. Furthermore, transportation construction activity in the Southwest can be largely seasonal, meaning that steady employment for these workers can reduce interest in the field. Equally so, employers face challenges during the construction season when demand is high, limiting the ability to fill these occupations in a timely manner. To help overcome a delay in filling occupation openings, greater outreach and engagement initiatives are needed to raise awareness of career opportunities to underserved populations.

Related Research: According to SWTWC's *Job Needs and Priorities Report Phase 1: Southwest Region*, from 2012 to 2022, the projected demand for transportation, storage, and distribution managers are estimated to increase by 4,590 employees (15.5%); logisticians, by 11,900 employees (33.7%); and laborers and freight, stock, and material movers, 117,650 employees (20.1%). However, barriers such as state policies, licensing preventing entry, and industry competition, upset the process of filling critical positions in the supply chain industry. Additionally, there is a lack of diversity in supply chain positions. Only 21.1% of transportation, storage, and distribution managers are women, while 8.2%, 3.4%, and 19.2% are Black or African American, Asian, or Hispanic/Latino, respectively. Hispanic/Latino individuals make up 24.1% of laborers and freight, stock, and material movers, while 17.6% are women, 19% are Black or African American, and 2.9% are Asian. For logisticians, while women make up 40.9% of the workforce, Black or African American, Asian, and Hispanic/Latino employees make up 14.4%, 4.2%, and 20.2%, respectively. The lack of diversity in supply chain occupations may be due to a lack of awareness of career opportunities available, as well as a lack of targeted outreach

efforts. The projected increase in demand for supply chain occupations provides transportation employers the opportunity to fill demand by attracting employees in underrepresented populations.

Action Plan 4: Supply Chain Diversity



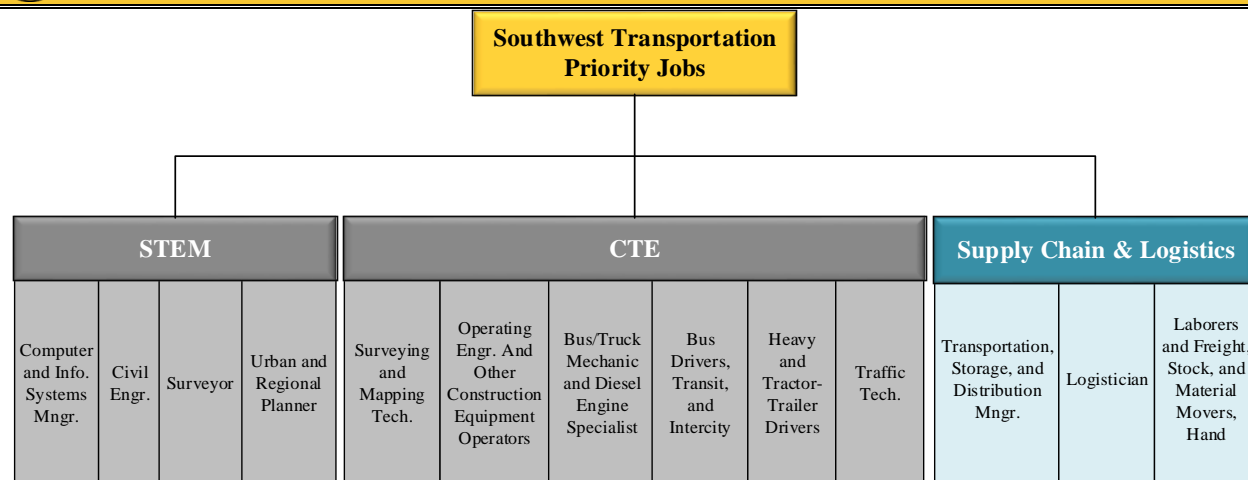
Target Audiences



SWTWC is focused on reaching out to underserved populations, particularly veterans who may substitute two years of military driving experience for the skills portion of the commercial license test. However, this recommendation can be implemented for any target transportation occupation. Target career stages may include: K-12, technical school, community college, four-year college, and incumbent workforce audiences



Relevant Positions



Implementation Plan



Action Lead(s): SWTWC in concert with a dedicated committee of industry stakeholders.

Steps to Implement

- 1. Assemble an Action Subcommittee, and Conduct Outreach.** Create a team of industry leaders and experts to steer and advise SWTWC in developing and implementing a series of webinars and meetings discussing specific workforce needs and entry barriers of underserved populations.
- 2. Identify and Network with Partners.** Identify and network with partners in workforce development committees, training programs, and leading industry organizations, such as the Council of Supply Chain Management for Professionals (CSCMP), and the International

Action Plan 4: Supply Chain Diversity

Trade Administration's Advisory Committee on Supply Chain Competitiveness. Explore methods to overcome barriers of entry for underserved communities and discuss the mutual benefits of incorporating these underserved populations into the supply chain workforce.

3. **Develop an Outreach Plan.** Develop a strategy to connect and disseminate information to workforce subcommittees and supply chain organizations about developing specific underserved populations into the workforce. This includes addressing the needs and concerns of potential students; connecting to community leaders and influential organizations within those communities; and outreach materials, such as presentations, flyers, videos, testimonials, and a program website with clear information on integration and opportunity. Efforts will also, through increased awareness, reduce or eliminate barriers non-traditional candidates may face in seeking careers in transportation, such as language acquisition challenges.
4. **Recruit DOT Participants and Develop Further Incentives.** Identify agency employees in transportation jobs at various levels and in different functions who are willing to work towards developing incentives such as scholarships, grants, apprenticeships, internships, and other exciting opportunities for individuals from specific underserved populations to fill these jobs. For example, additional support to pay for schooling and business ventures in logistics that provide opportunities to transfer into careers or training programs where individuals may build upon their existing skills and knowledge. Lastly, to expose employees and students of non-traditional or disadvantaged backgrounds, representative stakeholders should work with agencies to develop a virtual pre-employment realistic job preview (RJP) that interested candidates can complete before applying for a job. This can provide candidates with a candid preview of what the job entails by allowing them the opportunity to experience what the job is like through simulated job tasks and virtual career mentoring with transportation employees in different fields.
5. **Follow-Up with Partner.** After developing and implementing the program, follow-up with directors from the training program and employment agency. Discuss the number of individuals in the training program; needs of the professionals, educators, and employers; and the possibility of further expanding the partnership.



Communication Plan



Communication/Outreach Strategies

In order to communicate and conduct outreach to the targeted audience, SWTWC must identify best practices to market the career opportunities in logistics, distribution, and transportation available for the abovementioned underserved communities. This may include community leaders, organizations, associations, specific magazines and publications, blogs/websites, and conferences. In addition, SWTWC, in conjunction with the training program and employment agency, must develop marketing materials to promote the selected careers for the primary target audiences through the identified information channels for each underserved population. Outreach may include web banners, articles for trade publications and magazines, and an

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email/announcement for e-newsletters. In addition, alternative venues such as career seminars, workshops, and events that reach high school students may also be well-suited for outreach efforts.

- Identify key information resources used by the target audiences to market the idea of including transportation-related careers in existing transportation career initiatives.
- Develop marketing materials to promote transportation-related careers and tools to the primary target audiences through the identified information channels.
- Document resources and programs that reflect best practices and make information easily accessible and usable through web-based tools—including downloads of documents, case studies, and webinars—to highlight and assist in accessing, implementing and evaluating programs and initiatives.

Process for Obtaining Buy-In

- Provide data that highlight the impact of marketing supply chain careers and using tools such as the RJP, and tie them to the specific strategic goals that employers and agencies have set regarding recruitment and retention targets.
- Identify media contacts who cover education news and who would be interested in writing stories on the industry's/agency's efforts to education students on reputable jobs and careers within the transportation industry in the Southwest region. Produce readily usable material for use by media and professional organizations and promote access to them.
- Obtain case studies on the success of previously developed tools (e.g. RJP), demonstrated ROI, and other benefits of tools such as positive applicant perceptions.



Useful Internal and External Resources



Through careful documentation and analysis in the creation of a career pipeline for each of the key occupations, SWTWC will identify best practices which will model the creation of future transportation career pipelines for the supply chain critical occupations identified in *Job Needs and Priorities Report, Phase 1: Southwest Region*.

Additionally, the Center will leverage its Action Subcommittees to ensure that the training and education program addresses industry needs while continuing to garner support from both educators and leaders in transportation.

SWTWC will also maintain data on which career pipelines are most successful and why; whether the programs meets the needs of targeted underserved populations; and identify areas for improvement through feedback from students, professionals,, educators/trainers, and employers.



Examples of Effective Programs



- LINC'S (Leveraging, Integrating, Networking, Coordinating Supplies) is a national supply chain management education and certification program funded by a \$24.5 million U.S. Department of Labor TAACCCT grant. The Council for Supply Chain Management Professionals (CSCMP) is the official LINC'S industry partner and certifying body for the certifications.

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- The Cabrillo Academy of Global Logistics is housed at Cabrillo High School in Long Beach and was created by the Port of Long Beach in partnership with the Long Beach Unified School District. The new academy will be a four-year global trade and logistics pathway that will provide a unique opportunity to bring real world experiences to the classroom.
- International Trade Education Programs (ITEP) Through partnerships with ports, transportation, logistics, and related industries, ITEP prepares high school students for diverse career opportunities in high-growth job sectors. We develop innovative programs that integrate internships and career mentoring with the curriculum of high schools throughout Southern California. Volunteers from local businesses offer students the insights, skills, and confidence to thrive in the growing economy. Students build context between their studies and the real world through hands-on learning and carry that experience with them into the workplace.



Expected Impact



Expected Positive Outcome of the Practice

- Greater awareness and enhanced perceptions of supply chain careers are likely to result in a larger pool of talented applicants.
- Developing new methods to engage underserved populations in subsequent recruitment campaigns.

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