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NCHRP REPORT 685

Strategies to Attract and Retain a Capable Transportation Workforce

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

In recognition of these needs, the highway administrators of the American Association of State Highway and Transportation Officials initiated in 1962 an objective national highway research program employing modern scientific techniques. This program is supported on a continuing basis by funds from participating member states of the Association and it receives the full cooperation and support of the Federal Highway Administration, United States Department of Transportation.

The Transportation Research Board of the National Academies was requested by the Association to administer the research program because of the Board's recognized objectivity and understanding of modern research practices. The Board is uniquely suited for this purpose as it maintains an extensive committee structure from which authorities on any highway transportation subject may be drawn; it possesses avenues of communications and cooperation with federal, state and local governmental agencies, universities, and industry; its relationship to the National Research Council is an insurance of objectivity; it maintains a full-time research correlation staff of specialists in highway transportation matters to bring the findings of research directly to those who are in a position to use them.

The program is developed on the basis of research needs identified by chief administrators of the highway and transportation departments and by committees of AASHTO. Each year, specific areas of research needs to be included in the program are proposed to the National Research Council and the Board by the American Association of State Highway and Transportation Officials. Research projects to fulfill these needs are defined by the Board, and qualified research agencies are selected from those that have submitted proposals. Administration and surveillance of research contracts are the responsibilities of the National Research Council and the Transportation Research Board.

The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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The **National Academy of Engineering** was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. Charles M. Vest is president of the National Academy of Engineering.

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The **National Research Council** was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purposes of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both Academies and the Institute of Medicine. Dr. Ralph J. Cicerone and Dr. Charles M. Vest are chair and vice chair, respectively, of the National Research Council.

The **Transportation Research Board** is one of six major divisions of the National Research Council. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board's varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation. **www.TRB.org**

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COOPERATIVE RESEARCH PROGRAMS

FOREWORD

By Christopher J. Hedges
Staff Officer
Transportation Research Board

This guidebook provides straight-forward, implementable practices that transportation Human Resources (HR) managers and hiring professionals can use to improve the recruitment and retention of qualified employees in their organizations. It provides information on workforce challenges, industry strategies, and detailed descriptions of the most noteworthy practices within each of 15 recruitment and retention categories. The guidebook provides valuable information to transportation agencies facing unprecedented challenges in recruiting and retaining a professional workforce to deliver quality products and services in a rapidly-evolving environment.

Many transportation agencies are experiencing difficulty in attracting and retaining capable employees. Competition with other industries and fields, as well as current economic and demographic trends, is making it difficult to sustain an adequate and competent workforce. A growing number of employees are becoming eligible for retirement, and constraints on public sector financing limit the ability of transportation agencies to match salary and benefit levels of the private sector. Furthermore, advances in technology and increased emphasis on areas such as the environment, public outreach, and social equity require new skill sets to achieve agency objectives. These challenges are being experienced at all levels and disciplines throughout the organization. Without a skilled workforce, all aspects of an agency's transportation program are at risk.

There are studies that document methods for recruiting and retaining employees, but few have conducted an in-depth review of the results or provided guidance for implementation of the best practices. This research addresses a need to fill that gap and complement other ongoing efforts.

Under NCHRP Project 20-81 "Guide to Implementing Strategies to Attract and Retain a Capable Transportation Workforce," a team led by ICF International conducted a thorough review of relevant literature and current practices, convened focus groups to benchmark best practices and practical tools, and conducted in-depth case study analysis of 25 promising recruitment and retention programs. An introductory chapter explains how the guidebook was designed, how the separate chapters relate to each other, and how users can maximize the complex and multidimensional nature of the information and resources provided.

Supplemental materials are available on the TRB website at http://trb.org/Main/Blurbs/164747.aspx with full case summary details of the practices identified in the guidelines, as well as one-page implementation checklists that quickly show the purpose and intended target audience for each practice.

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Chapter 1: Guidebook Introduction

Over the past decade, the transportation industry has experienced unprecedented pressure to develop its workforce due to evolving recruitment and retention challenges (e.g., Cronin et al., 2007, Warne, 2003, Skinner, 2000). *NCHRP Synthesis 323: Recruiting and Retaining Individuals in State Transportation Agencies* found that transportation agencies are struggling to recruit and retain individuals with the right skill sets and as a result, to deliver quality products and services to their customers (Warne, 2003). Difficulty in recruitment and retention is a problem that is experienced at all levels and disciplines, and in both public and private sector organizations. In response to these challenges, this guidebook provides user-friendly information on specific recruitment and retention techniques that transportation Human Resources (HR) managers and hiring professionals can use to improve the recruitment and retention of qualified employees in their organizations.

This introductory chapter provides an overview of overarching transportation workforce challenges, the project methodology, and the remaining guidebook chapters. Each of these topics is discussed in the following sections.

1.1   Transportation Workforce Context

Technological, demographic, cultural, and political changes over the last 20 years, while holding great promise, also have introduced a host of difficulties. More specifically, the issues driving the concern with workforce development are:

- Demographic changes in the workforce
- Competitive labor market
- New technologies
- Demand on the transportation industry

Demographic Changes in the Workforce. The retirement of the "Baby Boomer" generation has been cited as one of the greatest challenges facing transportation organizations. *TRB Special Report 275: The Workforce Challenge: Recruiting, Training and Retaining Qualified Workers for Transportation and Transit Agencies*, indicates that 50% of the transportation workforce will be eligible to retire in the next 10 years, double the rate of the nation's entire workforce (TRB, 2003). In many cases, those eligible to retire are the individuals who are most likely to possess specialized knowledge and unique experiences that are critical for efficient operation of the organization (Rothwell and Poduch, 2004). According to the American Public Transportation Association (APTA), "Baby Boomers" constitute such a large portion of the total population that the age 65+ group is predicted to grow at a rate that is four times that of the entire population, indicating that every one out of five people will be in this group by the year 2030. Thus, while transportation demand will continue to increase, personnel losses for most transportation organizations will be significant. Adding further complexity is that the loss of these personnel will also result in core competency gaps needed to perform mission-critical requirements. An MTI Report entitled *Paving the Way: Recruiting Students into the Transportation Profession*s, specifically identifies the growing shortage of professional engineers and planners within the transportation industry. The report points out that the transportation industry must encourage "more civil engineering and urban planning students to specialize in transportation while completing their degrees." (Agrawal and Dill, 2009).

The "Baby Boomers'" retirements will result in new opportunities for the next generation. However, the influx of younger workers into leadership positions presents its own set of challenges. Jobs that were typically male dominated, such as engineering, are becoming less so (Cronin et al., 2007). APTA notes that the ratio of working women to working men has increased from approximately .5 to 1 to .8 to 1 from

1

1970 to 1998. Furthermore, according to the U.S. Department of Education, women have been earning more bachelor's degrees than men since 1982 and more master's degrees than men since 1981. In the 2005-2006 academic year (the most recent year for which data are available), women earned 58% of all bachelor's degrees and 60% of master's degrees. By 2016, women are projected to earn 60% of bachelor's, 63% of master's and 54% of doctorate and professional degrees.

At the same time, the number of ethnic minorities in the applicant pool is also increasing. In his discussion of Transportation in the 21st Century, Robert E. Skinner, Jr., the Executive Director of the Transportation Research Board stated, "We are becoming a nation of immigrants again. The immigrant population nearly doubled between 1950 and 1990. A net population growth from immigration of 820,000 per year is assumed in Census Bureau projections through 2035" (Skinner, 2000). A Fortune report also notes that minority-friendly companies consistently outperform the Fortune 500 index in terms of financial performance (Colvin and Gunn, 1999). Thus, transportation organizations should rethink their development and retention strategies to tailor programs to the evolving composition of their applicants and workforce.

As demographics change in the workplace, employee perceptions of work are also changing. Research suggests that younger workers, women equally as much as men, are looking for jobs with greater responsibility. In comparing 1992 with 2008, the 2008 National Study of the Changing Workforce found two emerging trends that are striking among Millennials (under 29 years old): women are just as likely as men to want jobs with greater responsibility, a change from 1992 when significantly more men under 29 wanted jobs with greater responsibility (80%) than women under 29 (72%) (Galinski, Aumann, and Bond, 2008). The information is important, because over one-half of participants in one study indicated that lack of awareness regarding advancement potential has at least some impact on why young people are not pursuing jobs in transportation (Cronin et al., 2007).

Research has also shown that employees—men and women— are taking routine time away from their job for the care of their children. For example, in today's workplace, men and women are spending about the same amount of time with their children under 13 years old on workdays (3 hrs for men, 3.8 hrs for women). This is 50% more than men did in 1977 (Galinski, Aumann, and Bond, 2008). The number of employed men (49%) who now say they take most or an equal share of child care responsibilities is also up from 41% in 1992. This commitment to career and family can lead to feelings of conflict as well. For example, in the same study, the majority of fathers in dual-earner couples (59%) reported experiencing some form of work-life conflict, which is up from 35% in 1977. The findings indicate that balance between work and family is critical for today's worker.

Demographic changes in the workforce, evolving perceptions of work, and the impending "Baby Boomer" retirement will be essential issues for DOTs to consider as agencies begin to revise recruitment and retention strategies targeted at the next generation of transportation workers. The programs described in this guidebook provide direction in addressing these challenges.

Competitive Labor Market. Transportation agencies attract employees with an offer of stable employment and a variety of benefits packages that include health, retirement, vacation plans, and special training programs. However, this may not be enough to retain employees in the long term. Warne's survey of 950 professionals showed that approximately 25% were considering leaving the agency (Warne, 2003). Higher salaries and promotional opportunities offered in the private sector and other fields were strong incentives in employees' considerations to leave the agency. The workplace culture is also a significant factor in an employee's decision whether to remain with the agency. This includes such things as schedule flexibility, professional development training programs to prepare workers for leadership positions, and educational assistance (Cronin et al., 2007). Skilled leadership, reasonable workloads, feeling good about their contribution and value to the agency, and rewarding good performance with

compensation and promotions are factors that are difficult to quantify but are important for employee retention.

Transportation organizations face many challenges when recruiting high-quality employees as a result of wage disparities. For example, on average, private sector engineering jobs pay more than public sector jobs. Reese (2003) found in a survey of younger (below age 35) American Society of Civil Engineers members that the average annual salary for private-sector engineers is $1,000 higher than the average for all engineers, while the average annual salary for pubic engineers is $1,000 lower than the average for all. Results from a survey of DOT transportation employees from Nebraska, Maryland, and Utah early in the decade, indicated that 25% of respondents were considering leaving because of the potential for a higher salary or a better opportunity for promotion elsewhere (Warne, 2003). Making matters even more complex, transportation agencies often compete with each other for qualified engineers. Because the public sector has financial constraints that limit the ability to match the salary and benefit levels of the private sector, transportation organizations must be creative in overcoming competition (e.g., through offering superior career development opportunities, focusing on the contribution transportation makes to the quality of life and economy in the United States, and providing a positive work environment, including flexibility in work schedules and other areas that enhance individual lifestyle and priorities without compromising organization work product, morale, or mission).

The image of transportation jobs also impacts recruitment efforts. It is especially difficult to attract individuals to entry-level positions, such as highway construction jobs, which comprise a large percentage of the transportation workforce. The positions are often branded as rigid and seniority-based (Warne, 2003). This perception pushes qualified applicants and employees to competing industries. While the industry's poor image is often unwarranted, the impact of a poor image underscores the importance of implementing innovative and effective human resource management practices. Effective strategies are needed to attract and retain high-performing, productive employees and to ensure the success of the industry (Cronin et al., 2007).

Furthermore, for engineering, planning, environmental, and financial specialist positions, recruitment challenges have increased substantially. Many college students are not finding the engineering field to be as attractive as other professions (Blue et al., 2005). Despite a slight growth in the number of women and ethnic minorities pursuing engineering degrees, there is still an under representation of these demographic groups in the field as compared with the general public. Additionally, the curriculum in engineering programs is often inadequate to match the requirements of engineering practitioner jobs. Thus, finding individuals for entry-level jobs with the appropriate skill sets to accomplish the work needed in transportation agencies can be especially difficult. For this reason, this guidebook describes numerous strategies for overcoming competitive labor markets throughout the recruitment-to-retention spectrum.

New Technologies. New technology has played an important role in how transportation agencies accomplish their mission. Technology advances in motor vehicle and aircraft production impacted mobility in the 20th century. In the 21st century, information technology such as computers, the Internet, Web-based and wireless communications, and advanced control systems has influenced not only what transportation agencies do but how they plan and conduct projects (TRB, 2003). Transportation agencies had to begin thinking of technology as a substitute for travel in some cases, allowing for more individuals to telework and conduct business from almost anywhere (Skinner, 2000).

Increased reliance on technology impacts recruitment and retention in multiple, and sometimes contradictory, ways. For example, while technology improves efficiency, the use of these devices may push aging employees out of the workforce as job functions become more "new-age" and complex. Conversely, utilizing the state-of-the-art tools to streamline work processes may help retain other employees as certain work tasks become easier. Cutting-edge technologies, likewise, may also help to

improve the industry's "rigid" image and be used as a recruitment tool. In any case, new employee-development techniques may help increase retention as job functions and procedures continue to evolve. In this guidebook, recruitment and retention challenges and solutions related to new technologies are discussed to assist managers in evolving their workforce planning efforts as technology evolves.

Demand on the Transportation Industry. The demand on transportation agencies has been increasing over the past few decades, which significantly affects the need for successful recruitment and retention practices such as those described in this guidebook. For example, vehicle miles traveled (VMT) has grown by over 80% in the past 20 years. While transportation agencies have worked hard to keep up with this increase, the capacity of the current highway system is still not adequate to address this growth (AASHTO, 2002). In addition, this growth is expected to occur at an average of 2.2% annually, which would equate to more than 3.35 trillion VMT by 2010. In fact, despite a slowing in the annual rate of growth in the general population, Census-based reports have suggested that the population may increase by over 20% by 2020 (Skinner, 2000). Movement along the coastal ports, as a result of freight transportation, has significantly increased as well, by approximately 14% from 1999 to 2000.

The overall use of the transportation system has also increased by over 20% in the last few years. There is increased freight traffic in residential neighborhoods due to the influx of online shopping and home delivery of packages (Mineta, 2003). A recent study published by TRB also suggests that more Americans are working outside of their county of residence and that this trend is predicted to continue (KFH Group, Inc., 2008). Thus, congestion is only expected to grow and the demands on state DOTs and other transportation agencies will continue to intensify. Adding further complexity, transportation agencies differ from state to state in size, structure, demographics, and turnover rates; thus practices such as recruitment and retention take on a different form from state to state.

1.2   Overview of Project Methodology

Given the workforce challenges described above, the researchers were contracted by NCHRP to develop a guidebook which describes the challenges facing transportation agencies as well as effective strategies for attracting and retaining a capable transportation workforce. To execute the project, three core tasks were conducted. An overview of the method for each task is provided in this section.

Task 1: Conduct a Literature Review. The goal of the literature review was to develop a deeper and broader understanding of the issues and proven solutions used to recruit and retain capable transportation workers. The literature review was structured to identify and assemble information from published and unpublished research, technical reports, conference presentations, and case studies. The review included a comprehensive analysis of over 170 sources, which included numerous workforce articles from the transportation literature as well as a review of materials from related industries.

Task 2: Conduct Benchmarking Study. The objective of Task 2 was to identify workforce challenges facing transportation and non-transportation agencies, additional best-practice workforce recruitment and retention techniques, and practical tools that may be applied by public transportation agencies. This involved assessing results from previous benchmarking studies and conducting focus groups with over 30 professionals who make HR decisions inside and outside of the transportation industry.

Task 3: Conduct Case Study Analysis. In Task 3, results from the first two study tasks were analyzed and 25 programs were identified. These programs provide valuable examples and guidance to human resource professionals and hiring managers in the transportation industry. To fully understand the intricacies of implementing and managing the practices, in-depth case studies were conducted on each of the 26 practices.

The results of these three tasks were used to create this guidebook.

1.3   Overview of Remaining Guidebook Chapters

This guidebook is a tool that transportation HR managers and hiring professionals can use to improve the recruitment and retention of qualified employees in their organizations. Using the aforementioned methodology, the research team identified 15 categories of viable strategies that aid in the recruitment and retention of capable staff. The guidebook is organized by these recruitment and retention categories (i.e., one chapter for each). Within each chapter, practical tools are presented for completing each strategy. As such, the remaining sections of the guidebook consist of the following chapters:

- Chapter 2: Using the Guidebook
- Chapter 3: Developing Future Applicant Skills
- Chapter 4: Increasing the Number of Applicants
- Chapter 5: Screening Applicants
- Chapter 6: Promoting Existing Staff
- Chapter 7: Branding the Organization/Industry
- Chapter 8: Reducing Voluntary Turnover
- Chapter 9: Anticipating & Managing Performance Issues
- Chapter 10: Developing Internal Staff Skills
- Chapter 11: Improving Culture/Climate
- Chapter 12: Leadership Development
- Chapter 13: Job Classification and Design
- Chapter 14: Succession Planning
- Chapter 15: Developing Knowledge Management Systems
- Chapter 16: Restructuring Benefits & Compensation
- Chapter 17: Work-Life Balance

Specifically, Chapters 3 through 17 within the guidebook provide information on workforce challenges, industry strategies, and detailed descriptions of the most noteworthy practices within each of 15 recruitment and retention categories.

Chapter 2: Using the Guidebook

This chapter provides an overview of the guidebook's organizing structures and describes how the guidebook can be most effectively used by transportation professionals. To accomplish this, a summary of the following topics is provided:

- Recruitment and Retention Topic Areas Used to Organize the Guidebook
- Overview of Transportation Workforce Pipeline
- Transportation Workforce Challenges
- Recruitment and Retention Industry Strategies
- Transportation Workforce Practices
- Volume II: Supplemental Materials

The purpose of providing these summaries in a separate chapter is to clearly explain how the guidebook was designed, how the separate chapters of the guidebook relate to each other, and to help ensure that users can maximize the complex and multidimensional nature of the information and resources provided.

2.1 Recruitment and Retention Topic Areas Used to Organize the Guidebook

In order to organize our searches and findings within our literature review, benchmarking study, and case study analysis, experts on the research team met to establish definitions for the concepts under study. First, they focused on specific content areas within the two major areas of interest: recruitment practices and retention practices. Within these overarching areas, the researchers identified 15 specific topic areas that present the greatest amount of challenge to the transportation industry. Exhibit 2-1 defines the final set of 15 recruitment and retention topic areas—5 recruitment and 10 retention categories.

Exhibit 2-1	
Recruitment and Retention Topic Areas Used to Organize Guidebook Chapters	
Recruitment Topic Areas	*Retention Topic Areas*
- Developing future applicant skills - Increasing the number of applicants - Screening applicants - Promoting existing staff - Branding the organization/industry	- Reducing voluntary turnover - Anticipating and managing performance issues - Developing internal staff skills - Improving culture/climate - Leadership development - Job classification and design - Succession planning - Developing knowledge management systems - Restructuring benefits and compensation - Work-life balance

Although each of the recruitment and retention topic areas has an important and specific focus, all categories are inter-related. Thus, an organization which struggles in one area is likely to struggle in other areas. Similarly, a strategy used to improve one specific area is likely to indirectly improve multiple areas. For example, a practice that is designed to help brand the transportation industry as an attractive career choice will likely also increase the number of applicants and help to reduce voluntary turnover. The 15 recruitment and retention categories were used to organize data collection during all project tasks and are used as the major organization mechanism for this guidebook. A full guidebook chapter is dedicated to each topic area.

2.2   Overview of Transportation Workforce Pipeline

The transportation workforce pipeline consists of the major career stages through which an employee might progress before, during, and after their employment at a transportation agency. The graphic in Exhibit 2-2 highlights these career stages and demonstrates that the 15 recruitment and retention categories introduced above influence the entire life cycle of the pipeline.

Exhibit 2-2
Transportation Workforce Pipeline Graphic

			Industry Career Stages				
K-12	**Comm. Colleges**	**4 year Colleges**	**Graduate Schools**	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	**Retirees**

TRANSPORTATION WORKFORCE PIPELINE

Developing Future Applicant Skills · Increasing the Number of Applicants · Screening Applicants · Promoting Existing Staff · Branding the Organization/Industry · Reducing Voluntary Turnover · Anticipating & Managing Performance Issues · Developing Internal Staff Skills · Improving Culture/Climate · Leadership Development · Job Classification And Design · Succession Planning · Developing Knowledge Management Systems · Restructuring Benefits & Compensation · Work-Life Balance

Guidebook's Overarching Recruitment and Retention Topic Areas

To begin each guidebook chapter, this graphic is presented again with only the topic area under consideration highlighted and the target pipeline career stages emphasized. The intention is to indicate the career stages that are most affected by the challenges, strategies, and workforce practices presented in that chapter. In the following sections, additional information is provided about the challenges, strategies, and workforce practices presented across all chapters of this guidebook.

2.3   Transportation Workforce Challenges

In each chapter of the guidebook, major workforce challenges facing transportation agencies within the topic area under consideration are presented. For the purposes of this guidebook, "challenges" describe the problems and issues organizations are facing around recruitment and retention of staff. An overview of the 49 workforce challenges discussed across all chapters is presented in this section, see Exhibit 2-3.

Exhibit 2-3 organizes the challenges into themes. It also indicates where relationships exist between each challenge and the recruitment/retention topics described in this guidebook. Since all of the challenges are related to multiple topics, the exhibit specifies the relationships and the chapter where more information about the challenge can be found using the following symbols:

- ✓ = Indicates primary relationship to recruitment/retention topic. This is the topic where the challenge has the greatest impact. Thus, decision makers should be sure to address this concern in the development of new workforce practices. This symbol also indicates the chapter where additional information about the challenge can be found.
- **x** = Indicates a relationship exists between the challenge and the recruitment/retention topic. In other words, the challenge impacts the corresponding recruitment/retention topic in some fashion and should be considered when developing a related program.

Exhibit 2-3
Workforce Challenges Matrix

Challenges	Recruitment Topics					Retention Topics									
	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch. 10	Ch. 11	Ch. 12	Ch. 13	Ch. 14	Ch. 15	Ch. 16	Ch. 17
	Developing Future Applicant Skills	*Increasing the Number of Applicants*	*Screening Applicants*	*Promoting Existing Staff*	*Branding the Organization/Industry*	*Reducing Voluntary Turnover*	*Anticipating & Managing Performance Issues*	*Developing Internal Staff Skills*	*Improving Culture/Climate*	*Leadership Development*	*Job Classification and Design*	*Succession Planning*	*Developing Knowledge Management Systems*	*Restructuring Benefits & Compensation*	*Work-Life Balance*
Lack of Planning: Failure to implement recruiting initiatives before a position needs to be filled.															
Lack of Recruiting Process	x	x	✓	x	x		x								
Failure to Adequately Brand the Industry	x	x	x		✓									x	x
Difficult Work Context: Applicants are sometimes not attracted to outdoor, manual labor jobs.															
Aversion to Manual Outdoor Labor	x	x	x	x	x	x					✓				
Geographic Challenges	x	✓	x	x							x				
Lack of Flexibility and Autonomy	x	x	x	x	x	x	x		x	x	✓	x		x	x
Bureaucratic Hiring Policies	x	x	✓	x	x										

Challenges	Recruitment Topics					Retention Topics									
Exhibit 2-3 (Continued) **Workforce Challenges Matrix**															
	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch. 10	Ch. 11	Ch. 12	Ch. 13	Ch. 14	Ch. 15	Ch. 16	Ch. 17
Evolving Workforce Trends: Evolving applicant pools make it difficult to identify top talent.															
Employee Age, Generational Gap	x	x	x	x	✓	x	x	x	x	x	x	x	x	x	x
National Disasters Creating Competitive Labor Market	x	✓	x	x	x	x	x	x		x		x	x		
Lack of Skilled Applicants	✓	x	x	x	x										
Lack of Diversity	x	✓	x	x	x	x		x	x	x		x			x
Speed of Technology			x	x	x	x	x	✓		x	x				
Aging Workers and Technology			✓	x	x	x	x	x	x	x	x	x			
Effect of Economic Downturn	x	x	✓	x	x										
Influx of Younger Workers: Difficulty redesigning jobs and policies that attract Generation Y															
Different Career Decision Making	x	x	x	x	x	x	x	x	x	x	x	x		x	✓
High Expectations of an Employer	x	x	x	x	x	x	x	x	x	x	x	x		✓	x
Lack of Learning Opportunities				x	x	x	x	x	x	✓	x		x		
Strong Competition: Better compensation elsewhere draws top applicants.															
Aggressive Recruiting	x	✓	x	x	x									x	x

Challenges	Recruitment Topics					Retention Topics									
	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch. 10	Ch. 11	Ch. 12	Ch. 13	Ch. 14	Ch. 15	Ch. 16	Ch. 17
Aggressive Wage Competition	x	x	x	x	x	x								✓	x
Competing on Benefits	x	x	x	x	x	x									✓
Failure to Invest in Talent Pipeline	✓	x			x										x
Leadership Issues: Supervisors do not know how to sell the organization.															
Interviewing Skills	x	x	x	x	x					✓					
Poor Employee Performance						x	✓	x	x	x					
Misperception of Industry: Applicants do not see certain jobs as having career advancement potential.															
Anti-Public Sector Sentiment	x				x	x				x				✓	x
Misperceptions of the Job	x	x	x	x	✓	x	x	x	x	x	x	x		x	x
Lack of Workforce Planning	x	x	x	x	x	x	x	x	x	x	x	✓	x		
Misperceptions of the Advancement Potential	x	x	x	✓	x	x		x	x	x	x	x			
Misperceptions of the Gender/Cultural Barriers	x	x	x	x	✓	x	x		x	x		x		x	x
Applicant Issues: Challenge to know who is legitimately qualified versus who is misrepresenting their qualifications.															
Difficulty Finding Applicants with In-Demand Skills	x	✓	x	x	x	x	x			x		x		x	x

Exhibit 2-3 (Continued) Workforce Challenges Matrix

Exhibit 2-3 (Continued) Workforce Challenges Matrix															
Challenges	*Recruitment Topics*					*Retention Topics*									
	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch. 10	Ch. 11	Ch. 12	Ch. 13	Ch. 14	Ch. 15	Ch. 16	Ch. 17
Transportation Issues		✓	x												
Impact of Children		x		x	x									x	✓
Applicant Trust after Layoffs		x		x	x	x	x		✓	x	x	x		x	
Difficulty Ensuring Continuity of Organizational Resources: Failure to plan for customary turnover within an organization.															
Lack of Knowledge Transfer						x		x		x	x	x	✓		
Lack of Career Path/Succession Planning					x	x	x	x	x	x	x	✓	x		
Demanding Work Environment: Retaining employees in manual, outdoor labor jobs.															
Short-term Turnover	x	x	x	x	x	✓	x	x	x	x	x	x	x	x	x
Public Sector Challenges	x	x	x	x	x	x	x	x	✓	x	x	x	x	x	x
Retaining a Diverse Workforce	x	x	x	x	x	x	x	x	✓	x	x	x		x	x
Evolving Workforce Structures: Institutional knowledge leaving with retiring employees.															
Fleeting Institutional Knowledge						x	x	x		x	x	x	✓		
Changes in Policy and Technology	x	x	x	x	x	x	x	✓		x	x	x	x		
Generational Issues: Teamwork between generations is strained by different worldviews.															
Lack of Organizational Commitment			x	✓	x	x	x	x	x	x	x	x		x	x
Differences in Job Expectations	x	x	x	x	x	✓	x	x	x	x	x	x		x	x

	Recruitment Topics					Retention Topics									
Exhibit 2-3 (Continued) **Workforce Challenges Matrix**															
Challenges	Ch. 3	Ch. 4	Ch. 5	Ch. 6	Ch. 7	Ch. 8	Ch. 9	Ch. 10	Ch. 11	Ch. 12	Ch. 13	Ch. 14	Ch. 15	Ch. 16	Ch. 17
Tough Competition from Related Industries: Better compensations draws top employees.															
Better Compensation and Responsibility	x	x	x	x	x	x	x			x				✓	x
Better Location	x	x	x	x	x	✓								x	x
Leadership Issues: Supervisors do not know how to provide customized feedback.															
Difficulty Choosing Leaders				x	x	x		x		✓	x	x	x	x	
Lack of Training for Leaders/Supervisors				x		x		x	x	✓	x	x	x		
Deficiency in Top Management Support				x		✓	x	x	x	x	x	x	x	x	x
Training Issues: Difficulty designing the right type and amount of training that engages, challenges and retains employees.															
The Cost of Training				x	x	x	x	✓	x	x		x	x	x	
Difficulty Providing Sufficient Quality Training				x	x	x	x	✓	x	x		x	x	x	
Failure to Apply Training				x		x	x	✓	x	x	x	x	x		
Failure to Update Training				x		x	x	✓	x	x	x	x	x		

2.4   Recruitment and Retention Industry Strategies

"Strategies" refer to the methods and solutions being used across organizations to address workforce challenges. In each chapter of the guidebook, major workforce strategies being implemented at transportation agencies related to the topic area under consideration are presented. An overview of the workforce strategies presented across all chapters is given in Exhibit 2-4. This exhibit organizes the strategies under the recruitment and retention topic areas. In addition, it indicates the chapter where more information about the particular strategy can be found in the guidebook.

Exhibit 2-4	
Summary of Major Recruitment and Retention Strategies and Chapter Location	
Recruitment Strategies by Topic Areas	*Retention Strategies by Topic Areas*
Chapter 3: Developing applicant skills - Developing internship or fellowship programs - Partnering with schools for youth development - Developing student curriculum and educational academies - Sponsoring scholarships **Chapter 4: Increasing the number of applicants** - Expanding the recruiting horizon - Hosting career days - Implementing employee referral programs - Tailoring advertising efforts - Considering non-traditional hires - Advertising in foreign languages - Partnering with source organizations to increase numbers - Integrating with source organizations - Harnessing technology - Utilizing social networking **Chapter 5: Screening applicants** - Preparing hiring managers to screen - Using multiple interviewers - Integrating human resources in the hiring process - Screening for eligibility - Screening for competency - Screening for "fit" **Chapter 6: Promoting existing staff** - Recruiting existing employees - Developing employees and maintaining employee career paths - Creating a job rotation program - Developing a staffing plan	**Chapter 8: Reducing voluntary turnover** - Removing obstacles to employee growth - Rewarding citizenship behaviors - Keeping former employees close - Rewarding employees - Taking care of employees - Focusing on retention early and learning from mistakes **Chapter 9: Anticipating and managing performance issues** - Providing meaningful performance feedback - Evaluating organization and job fit in the recruitment process - Implementing workforce planning and hiring the best people - Utilizing realistic job previews (RJPs) - Mentoring and coaching employees **Chapter 10: Developing internal staff skills** - Using job rotation - Offering off-site and higher education training opportunities - Offering certification-type programs - Tailoring training opportunities to build competency - Using technology to support training **Chapter 11: Improving culture/climate** - Improving the work environment - Engaging the community - Surveying and interviewing - Engaging the employees **Chapter 12: Leadership development** - Providing leadership training - Implementing leadership development to support specific demographic groups - Emphasizing follower development in leadership training - Mentoring and coaching leaders

Exhibit 2-4 (Continued) **Summary of Major Recruitment and Retention Strategies and Chapter Location**	
Recruitment Strategies by Topic Areas	*Retention Strategies by Topic Areas*

▪ **Chapter 7: Branding the organization/industry**
  - Advertising the strengths of the organization
  - Getting involved in the community and advertising it
  - Using real employees in advertisements
  - Making the jobs appealing
  - Capitalizing on social networking technology
  - Improving image as "diversity friendly"
  - Using a comprehensive marketing campaign
  - Communicating a message and targeting an audience
	▪ **Chapter 13: Job classification and design**
	  - Creating dual career tracks for managers and technical experts
	  - Emphasizing job enrichment
	  - Creating advancement within positions
	▪ **Chapter 14: Succession planning**
	  - Implementing a succession planning program
	  - Establishing diversity goals
	▪ **Chapter 15: Developing knowledge management systems**
	  - Creating people-focused knowledge management systems
	  - Implementing communities of practice
	▪ **Chapter 16: Restructuring benefits and compensation**
	  - Researching competitive compensation
	  - Supplementing with alternative benefits packages
	▪ **Chapter 17: Work-life balance**
	  - Improving existing work schedule
	  - Allowing flexible schedules and days off
	  - Establishing a breadth of policies to support different employee needs
	  - Allowing telework for high performers

2.5   Transportation Workforce Practices

The "workforce practices" presented within this guidebook are specific examples of real-world practices designed to address the workforce challenges facing transportation organizations. In each guidebook chapter, case study summaries of notable workforce practices are presented along with a listing of other example workforce practices that are being used by organizations to address the challenges discussed. The practices provided also indicate how the strategies presented in each chapter are being implemented within specific transportation agencies.

An overview of the case study summaries presented across all chapters is provided in Exhibit 2-5. This exhibit organizes the case study practices under the recruitment and retention topic areas, and it indicates the chapter where more information about the particular practice can be found in the guidebook. Additionally, Exhibit 2-5 identifies the job type (i.e., administrative employees, engineers, maintenance employees, or general staff); the Return on Investment (ROI) (i.e., a short-term [0 to 3 years]; a mid-term [4-10 years]; or a long-term workforce solution [11+ years]); and the generation (i.e., younger, older, or workers of all ages) that is most relevant for each case study practice. These designations allow Human Resource (HR) professionals and hiring managers to quickly know which chapters and workforce practices are most relevant based on individual agency needs (e.g., need for a short-term solution for engineers).

Exhibit 2-5 Case Study Practices Matrix			
Program	*Job Type**	*ROI***	*Generation****
RECRUITMENT			
Ch. 3: Developing Future Applicant Skills			
Oregon DOT College Internship Program (CIP)	Engineers	Short- to Mid-term	Younger
Minnesota DOT Seeds Student Worker Program	Engineers	Short-term	Younger
Ch. 4: Increasing the Number of Applicants			
The Kentucky Transportation Cabinet Civil Engineering Scholarship Program	Engineers	Short- to Mid-term	Younger
Minnesota DOT Community Advisors on Recruitment and Retention Solutions (CARRS)	All	Short-term	All
Ch. 5: Screening Applicants			
Pennsylvania DOT Civil Engineer Training (CET) Program	Engineers	Mid-term	Younger
Ch. 6: Promoting Existing Staff			
North Carolina DOT Supervisor Academy	All	Short-term	All
Ch. 7: Branding the Organization/ Industry			
Iowa State University's Institute for Transportation (InTrans) *Go!* Magazine	All	Short- to Mid-term	Younger
Washington State DOT Branding through Social Media	All	Short-term	Younger
RETENTION			
Ch. 8: Reducing Voluntary Turnover			
Regional Transportation District (RTD) Champions of Transit Program	All	Short-term	All
Missouri DOT Employee Solutions at Work (SAW) Program	All	Short-term	All
Ch. 9: Anticipating and Managing Performance Issues			
Minnesota DOT Individual Competencies for All Mn/DOT Positions	All	Short- to Mid-term	All
Virginia DOT Downsizing Substitution Program	All	Short-term	All
Ch. 10: Developing Internal Staff Skills			
North Carolina DOT Transportation Supervisor Conference (TSC)	All	Short-term	All

Exhibit 2-5 (Continued) Case Study Practices Matrix			
Program	*Job Type**	*ROI***	*Generation****
Ch. 11: Improving Culture/Climate			
City of Annapolis DOT (ADT) Inter-Office Committee (IOC)	All	Short-term	All
South Carolina DOT Rehabilitation Program	Maintenance	Short-term	All
Ch. 12: Leadership Development			
Maryland SHA Advanced Leadership Program (ALP)	All	Short-term	All
Santa Clara Valley Transportation Authority (VTA) Joint Workforce Investment (JWI) Program	All	Short-term	All
Ch. 13: Job Classification and Design			
Minnesota DOT Transportation Specialist Series (TSS)	Maintenance	Short-term	All
Pennsylvania DOT Position Analysis Workbooks (PAWS)	All	Short- to Mid-term	All
Ch. 14: Succession Planning			
Minnesota DOT Succession Planning	All	Long-term	Older
Pennsylvania DOT Succession Planning	All	Long-term	Older
Ch. 15: Developing Knowledge Management Systems			
Virginia DOT Knowledge Management Program	All	Mid- to Long-term	All
Ch. 16: Restructuring Benefits and Compensation			
Santa Clara Valley Transportation Authority (VTA) Medical Opt-Out Program	All	Short-term	All
North Carolina DOT Competency-Based Pay Program	All	Short- to Mid-term	All
Ch. 17: Work-Life Balance			
Federal Highway Administration (FHWA) Alternative Duty Location	Administrative	Short-term	All

*Job Type refers to whether the practice is specifically designed for administrative employees, engineers, maintenance employees, or general staff.
**Here Return on Investment (ROI) refers to the time period when a strategy is expected to yield benefits i.e., the short term (0 to 3 years), mid term (i.e., 4-10 years) or long term (i.e., 11+ years). Though a strategy may be designed or intended to deliver substantial benefit in the short term, and is shown as such here, many strategies have cross-cutting long-term benefits.
***Generation refers to whether the practice is specifically relevant for younger, older, or workers of all ages

2.6 Volume II: Supplemental Materials

The files for Volume II are located on the TRB website at http://trb.org/Main/Blurbs/164747.aspx and present supplemental material related to the 15 recruitment and retention practices previously discussed. The materials provide in-depth information related to the real-world, innovative recruitment and retention practices that are referenced in the following guidebook chapters. These programs are being used by transportation agencies as well as organizations in related fields facing similar workforce challenges. The materials are designed to provide readers with detailed information related to implementing the example workforce strategies discussed within each guidebook chapter. Specifically, Volume II provides full case studies and one- to two-page summaries of example workforce practice. These two resources are described below.

Full Case Studies. The full case studies presented in Volume II expand upon the case study summaries provided in each of the remaining Volume I chapters. (See Exhibit 2-5 for a full list of case study programs.) The information presented in the full case studies is organized into six broad topic areas:

- Organizational and Interviewee Background Information
- Practice Background
- Implementation
- Maintenance
- Transferability
- Conclusion

Exhibit 2-6 displays the organization scheme found within each case study. These case studies are designed to allow agencies to learn more about each notable workforce practice and give them valuable information necessary to implement a similar practice in their own agency.

Exhibit 2-6 **Case Studies Organization Scheme**
Organizational and Interviewee Background Information
- Interviewee(s) Position(s) and Responsibilities   - Organizational Personnel Size   - Organizational Workforce Demographics
Practice Background
- Practice Summary   - Name and Acronym   - Goals and Purpose   - Issue(s) the Practice Originally Intended to Address   - Current Recruitment and Retention Challenges   - Criteria Used and Data Collected to Realize Condition/Severity of the Problem   - Anticipated Results of Practice Implementation   - Actual Results of Practice Implementation   - Benefits from Practice   - Alleviated Workforce Issues

Exhibit 2-6 (Continued)
Case Studies Organization Scheme

Implementation

- Implementation Leader
- Achieving Organizational Buy-In
  - Level of Buy-In Obtained
- Communication to Employees
  - Training to Familiarize Employees
- Tools to Facilitate Delivery
- Time to Implement Practice
- Implementation Costs
- Documentation of Practice Implementation, Maintenance and/or Success

Maintenance

- Length of Practice Existence
- Participants
  - Target Job Type
  - Target Audience
- Reaction from Employees
  - Positive Reactions
  - Negative Reactions
- Criteria Used to Evaluate Strengths and Weaknesses
  - Evaluation Results, Reasons for Success/Failure, and Recommended Criteria
  - Practice Results
- Impact on Agency Operational and Maintenance Performance
- Pros of Practice
- Cons of Practice
- Contextual or External Factors Impacting Success
  - Factors Facilitating Success
  - Factors Inhibiting Success

Transferability

- Temporary vs. Long-Term Solution
  - Usefulness in Various Economies
  - Impact of Future Transportation Trends on Practice Success
- Transferability to Other Organizations
- Documentation Available to Other Organizations

Conclusion

- Lessons Learned and Recommendations
- Practice Innovativeness
- Practice Website
- Contact Information

Note: Some case studies may not include every heading or subheading due to the inability to collect some information for a case study.

Example Practice Summaries. In addition to the case studies, the supplemental materials provide one- to two-page summaries of other example practices within each recruitment and retention topic area. These summaries provide high-level information about the practice, as detailed in Exhibit 2-7.

| **Exhibit 2-7** |
| **Example Practice Summaries Organization Scheme** |
| Practice Title Lead Organization Practice Description Program Purpose Recruitment Retention Targeted Participants Job Type Audience Other Notable Factors ROI Economic Influence Innovativeness Resources Website Source |

Note: Not all one-page summaries include every category due to the inability to collect that information for a practice.

2.7   Summary

This guidebook was designed to be a practical tool that transportation leaders can use to address recruitment and retention challenges. The information provided in this chapter is intended to clarify how the guidebook is organized. The chapter can also serve as a point of reference so that answers to specific questions relating to only a segment of the transportation workforce can be found quickly. In the following chapters, detailed information related to each of the 15 recruitment and retention topics areas is presented.

Chapter 3: Developing Future Applicant Skills

The transportation industry has experienced recruitment challenges within specific work areas, in part due to the significant reduction in the number of students entering fields important to transportation such as engineering, construction, and maintenance. In response, innovative organizations are working to develop the skills and interests of future potential applicants as a part of their recruitment practices. In this chapter, we present challenges, strategies, and workforce practices related to "Developing Future Applicant Skills." Exhibit 3-1 provides a snapshot of the chapter.

Exhibit 3-1 Snapshot of Chapter 3	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..……...…..**22** ▪ **Lack of Skilled Applicants** ▪ **Failure to Invest in Talent Pipeline** **Industry Strategies**…………………**22** ▪ **Conduct Internship/ Fellowship Programs** ▪ **Partner with Schools for Youth Development** ▪ **Develop Student Curriculum and Educational Academies** ▪ **Adopt Scholarship Programs** **Workforce Practices**…..……………**23** ▪ **Oregon DOT College Internship Program (CIP)** ▪ **Minnesota DOT Seeds Student Worker Program**	 Innovative Transportation organizations are developing career interests among high school and college students.
	Definition of Developing Future Applicant Skills: Involves identifying avenues for developing the skill sets of youth during the K-12 years as well as at the undergraduate level. The goal of these efforts is to prepare these students for future employment in the transportation industry and as a result, these practices help to establish a solid pipeline of future talent for transportation jobs.

Workforce Pipeline Target Area

Target Career Stages							
K-12	**Comm. Colleges**	**4 year Colleges**	**Graduate Schools**	*Entry-Level Staff*	*Mid-Career Staff*	*Senior Leaders*	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Developing Future Applicant Skills

Chapter 3 Target Area

3.1   **Workforce Challenges.** Programs related to "Developing Future Applicant Skills" are typically designed to address challenges associated with developing capable and competent applicants in the workforce pipeline. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Lack of Skilled Applicants. Organizations have noticed that fewer people are enrolling in engineering schools and trade schools as more students are selecting traditional four-year schools to continue their education. Furthermore, once enrolled at colleges and universities, students tend to focus on white collar or service-based industries (e.g. office or retail) instead of production-based industries, like construction or factory work.

Failure to Invest in Talent Pipeline. When organizations sacrifice important programs during tough economic times that would otherwise help to build their talent pipeline (such as internship programs), they often struggle to find talent when needed. For example, during prosperous times many transportation organizations have internship programs for students that encourage students to join the organization while finishing school and allow the organization to prepare the students for future full-time employment once the students graduate. This type of program often builds commitment in younger workers. Agencies that invest in local student populations through these types of programs can quickly become known as a preferred employer, which results in increased attraction of candidates and improved retention of younger workers. On the contrary, employers who sacrifice these types of internship programs during times of budgetary constraint may find that their organizational stature declines and future recruiting becomes harder.

3.2   **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts to "Develop Future Applicant Skills" (see Exhibit 3-2). While these strategies represent the general direction of human resource departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 3-2 Industry Strategies: Developing Future Applicant Skills	
Strategy	*Strategy Description*
Conduct Internship/ Fellowship Programs	Organizations sometimes conduct summer apprenticeship programs where students are paid for their services while developing skills. They also offer internships and part-time positions to potential applicants who are currently in school for a transportation-related field (such as civil engineering). Organizations benefit from the inexpensive but informed employee and the employee/intern benefits from the real world experience obtained. Potential applicants can develop relationships and professional experience in these situations that may convince these individuals to pursue job opportunities once they have graduated. Organizations such as the Transportation Construction Foundation and the Academy of Construction Technologies are helpful in supporting these types of programs.
Partner with Schools for Youth Development	Agencies have begun partnering with schools to create centers, host conferences, or deliver programs where students can gain hands-on experience in the industry jobs.

Exhibit 3-2 (Continued) Industry Strategies: Developing Future Applicant Skills	
Strategy	*Strategy Description*
Develop Student Curriculum and Educational Academies	DOTs, University Transportation Centers (UTCs), and other organizations sometimes work with engineering departments at colleges and universities to develop or tailor courses to address the technical needs of the industry. The recent inclusion of context-sensitive solutions is one such example. At times, contractors give presentations as guest speakers or provide scholarships with an emphasis on the transportation side of engineering. Organizations have also begun to work with elementary, middle, and high schools to develop math and science examples that involve transportation content. Guidebooks and brochures are being provided to teachers to help them develop their own transportation-related science lessons. The previously discussed "TRACPAK" develops these materials in order to raise awareness of the transportation field as a potential career. Since education is closely connected to individuals who influence job decisions (such as teachers or school counselors), transportation organizations need to consider ways to support education including grants for night school, scholarships for degrees in transportation, and certification classes during off-peak times.
Adopt Scholarship Programs	Scholarship programs provide an opportunity for students to obtain the skills they need to be successful in future transportation jobs. Agencies often partner with universities to provide scholarships to students, sometimes targeting minority students with the goal of increasing the future diversity in the workplace. Some scholarship programs have a contingency of future employment with the sponsoring agency, thereby establishing a contractual arrangement that helps the agency with recruitment of talent.

3.3 **Workforce Practices.** Thirty workforce practices that were designed to "Develop Future Applicant Skills" within transportation agencies were reviewed, and we identified two workforce practices that were noteworthy within this context:

- Oregon DOT College Internship Program (CIP)
- Minnesota DOT Seeds Student Worker Program

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

Oregon DOT College Internship Program (CIP).
Oregon Department of Transportation's (ODOT) College Internship Program is one of the largest in Oregon. ODOT's internship program was initially designed to introduce interested engineering students to the agency and enable them to get hands-on experience on actual projects, which would help the interns determine what aspects of engineering they like most and want to pursue. ODOT's strategy in building the agency and its recruitment base is to pursue a diverse set of perspectives and skill sets, and to help interns recognize aspects of the job that are important beyond just pay. ODOT invested in marketing the program and advertised the opportunity as one where interns could work on large projects with smart and creative people.

> *Oregon DOT College Internship Program*
> - **Job Type:** Engineers
> - **ROI:** Short- to mid-term
> - **Generation:** Younger
> - **Key Program Highlights:**
>   - Interns are mostly college students
>   - 65 to 70 Internships per year
>   - Provides students hands-on experience on real-world projects while also establishing relationships between student and organization that could result in potential employment

The initial step in implementing the internship program is the collection of internship projects and positions from various managers around the state within the highway division. These managers complete a summary of the project and intended outcomes, and identify measurable activities and goals. Available internships and locations are posted on-line, and then the ODOT Human Resource (HR) personnel and interested managers and specialists perform a nationwide, in-person recruiting effort at colleges and work fairs in the West, South, and Midwest.

ODOT has between 65 and 70 internship opportunities each summer, with over 200 highly qualified engineering students applying each year. The initial requirements to intern include maintaining a Grade Point Average (GPA) of over 3.5, presenting references from two professors, and providing answers to essay questions on their reasons for interning and what they expect to gain from their internship. ODOT HR implements an interview process with those applicants that qualify after the first hurdle. Based on these conversations and submitted records, HR works with the managers to understand what type of candidate and qualifications they are seeking. HR then chooses four to five candidates and presents these candidates to the managers.

This program has now expanded to include not only recruiting interested engineers, but also recruiting potential candidates with backgrounds in Information Systems and heavy equipment operators and mechanics. ODOT is now also doing some recruiting for Right-of-Way (ROW) and geotechnical positions and is continuing to expand its internship program to cover other areas, such as accounting and finance. ODOT sees student interns as their greatest marketing tool, especially when these students return to their schools and courses and converse with other students about the agency. ODOT further supports the program with an off-site orientation and mid-summer engineering conference for networking and the sharing of projects and lessons learned. The program also feeds ODOT's Graduate Engineer program, a rotation program available to both internal staff and recent graduates.

In addition to paying the salaries of 1.5 full-time employees, ODOT spends money each year to sustain the internship program's success. The agency budgets around $150,000 to $200,000 per year for the program's marketing and national outreach efforts. The agency also hosts a couple of "engineering days," which cost about $20,000 to $30,000 per day, at the beginning of the summer as an orientation and kick-off and at the end to share projects and lessons learned. This includes the costs associated with renting a center to host the event in a special, off-site location.

The internship program provides students with the opportunity to obtain valuable hands-on experience and training as they work with other employees on large, real-world projects. ODOT finds the biggest benefit of this program to occur when students return to their colleges and share their positive experiences with other students. Through word-of-mouth and communication about the program, ODOT has been able to successfully brand itself as one of the leading places to work.

Minnesota DOT Seeds Student Worker Program.

Minnesota Department of Transportation's (Mn/DOT's) program called *Seeds* is an approach to growing talent in-state, as an alternative to out-of-state recruiting. The program began with the intent to find good students, connect them with on-the-job learning opportunities, and build them into well-qualified potential job candidates. The program has a special focus on increasing ethnic, gender, and economic diversity.

Mn/DOT has expanded from potential engineers to other employment classes, including the technicians that constitute 50% of the agency's

> ***Minnesota DOT Seeds Student Worker Program***
> - **Job Type:** Engineers
> - **ROI:** Short-term
> - **Generation:** Younger
> - **Key Program Highlights:**
>   o Connects students with on-the-job learning opportunities
>   o Focuses on increasing ethnic, gender, and economic diversity
>   o Accommodates about 50 students per year

workforce. Mn/DOT has tried to make sure that *Seeds* students and the program are present in every part of the department as the agency has found that to be the best way to get the word out about the program. Mn/DOT has also supported program implementation through use of its community liaison program, supervisor training, mentoring support, and an annual workshop for *Seeds* participants and managers. Mn/DOT has developed *Seeds* program guidelines and presentations, which can be shared with other DOTs.

Mn/DOT has measured success in the number of permanent hires the agency has made out of the *Seeds* program. The agency also credits a substantial percent of its total diversity to the achievements of the *Seeds* program. Mn/DOT has devoted 1.5 full-time equivalent (FTE) staff and about $500,000 annually to implementing *Seeds*, which accommodated 70 students this past year and about 50 students in an average year. The program manager handles the mentoring program and helps with performance reviews for the students. Part of the success of the program is the investment in the students throughout their careers such as the mentoring and shepherding to help the student navigate a DOT career. The *Seeds* program has a 72% placement rate, which Mn/DOT considers a worthwhile investment. Five disabled candidates have been hired in the past year as an outgrowth of the program. Candidates placed out of the *Seeds* program also have a higher GPA than other incoming candidates and hiring authorities express a high degree of satisfaction with *Seeds* candidates and hires.

Other Example Practices

To serve as an additional resource for agencies interested in "Developing Future Applicant Skills," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Center for Advanced Cement-Based Materials' "Concrete: What is this stuff?" Program
- American Society of Civil Engineers 2009 South East Student Conference
- Build Up! Toolkit
- Carl Albert Public Internship Program
- CityBuild Academy
- Kokosing Construction Company's CO-Ops Program

- Cooperative Apprenticeship Program at Metropolitan Transit Authority, New York City Transit
- Arkansas EAST Initiative
- Eisenhower Fellowships for Special Groups
- Engineering Resource Development Program
- Engineering the Future: Science, Technology, and the Design Process
- Garrett A. Morgan Transportation and Technology Futures Program

- Grants for Research Fellowships
- Local Technical Assistance Program
- Minority Research Fellowship Programs
- National Asphalt Pavement Association Research and Education Foundation - Scholarship Program
- National Park Transportation Interpreters Program
- National Park Transportation Scholars Program
- South Carolina Vocational Rehabilitation Department
- Student Mentor Program

- Tennessee Information Technology Community College Co-Op Program
- The Ed and Charlotte Rodgers Scholarship Fund
- Transportation and Civil Engineering Program
- TransTech Academy's Electro-Mechanical Technology Training Program
- University of South Florida Graduate Interdisciplinary Transportation Program
- University Transportation Centers
- West Point Bridge Design Contest

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 4: Increasing the Number of Applicants

Research has shown that the transportation industry has difficulty recruiting new talent into some of their jobs, especially talent from two important demographic groups: youth and non-traditional labor pools (e.g., women and minorities). This is primarily because of a lack of awareness of job opportunities in the industry (U.S. Department of Labor, 2004). To address this issue, forward thinking transportation agencies are casting a wider net for job applicants. In this chapter, we present challenges, strategies and workforce practices related to "Increasing the Number of Applicants." Exhibit 4-1 provides a snapshot of the chapter.

Exhibit 4-1 Snapshot of Chapter 4	
Chapter Road Map	**Concept and Definition**
Workforce Challenges……….......…..**29** ▪ **Geographic Challenges** ▪ **National Disasters Creating Competitive Labor Market** ▪ **Lack of Diversity** ▪ **Aggressive Recruiting** ▪ **Difficulty Finding Applicants with In-Demand Skills** ▪ **Transportation Issues** **Industry Strategies**……………………**30** ▪ **Expand the Recruiting Horizon** ▪ **Host Career Days** ▪ **Implement Employee Referral Programs** ▪ **Tailor Advertising Efforts** ▪ **Consider Non-Traditional Hires** ▪ **Advertise in Foreign Languages** ▪ **Partner with Source Organizations to Increase Numbers** ▪ **Integrate with Source Organizations** ▪ **Harness Technology** ▪ **Utilize Social Networking** **Workforce Practices**…..……………..**35** ▪ **Kentucky Transportation Cabinet Civil Engineering Scholarship Program** ▪ **Minnesota DOT Community Advisors on Recruitment and Retention Solutions (CARRS)**	 Agencies have started partnering with undergraduate institutions and minority organizations in order to better increase the number of applicants, specifically those applicants who are young and from non-traditional labor pools. **Definition of Increasing the Number of Applicants:** Involves identifying avenues for increasing the number of applicants from the community college through senior-leader populations. The goal of these efforts is to increase awareness of and attract more job-seekers to the transportation industry. As a result, these practices help to establish a solid applicant pool of potential employees for available transportation jobs.

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Exhibit 4-1 (Continued) Snapshot of Chapter 4							
Workforce Pipeline Target Area							
Target Career Stages							
K-12	**Comm. Colleges**	**4 year Colleges**	**Graduate Schools**	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Increasing the Number of Applicants

Chapter 4 Target Area
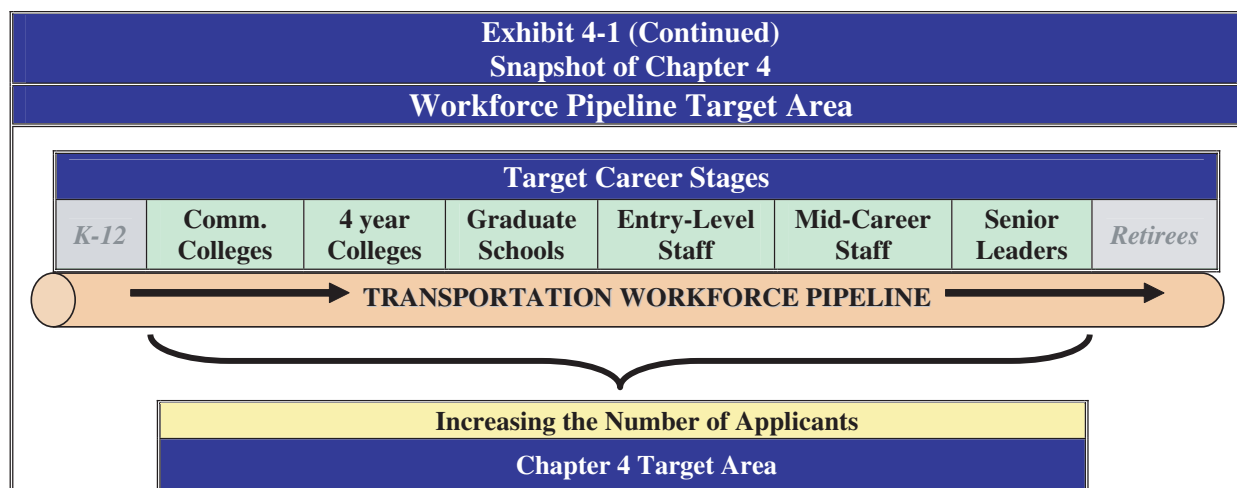
4.1   Workforce Challenges. Programs related to "Increasing the Number of Applicants" are typically designed to address challenges associated with creating interest and awareness of career opportunities within the transportation industry. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Geographic Challenges. Organizations struggle to fill vacancies in rural or remote geographical locations. Potential candidates in urban areas do not want to leave or commute to these locations. Adding to the difficulty in some places, large factories and plants located in these areas can provide competitive compensation for local applicants.

National Disasters Creating Competitive Labor Market. Recent national disasters, such as Hurricane Katrina, the flash floods in Iowa, and the Deep Water Horizon oil spill, have affected the supply and demand of transportation workers in different areas of the country. As a result of these disasters, there has been an increase in construction job opportunities in these areas, which has led to an exodus of unskilled transportation workers from other states. Unskilled laborers flock to disaster relief jobs because these types of jobs typically do not require training and provide steady work with high wages. As a result, unskilled laborers in these jobs have little incentive to switch to transportation jobs that eventually require training and certifications. This situation has evolved somewhat with the economy, but forecasts of climate change, rising temperatures, and increasing storms suggest that these patterns and issues could be a bigger issue again, in the future.

Lack of Diversity. Organizations struggle to ensure a diverse workforce that mirrors the demographics of the local area. Women and minorities are the most difficult demographic groups to recruit. Although much of the unskilled industry is supported by minorities, little research has been done to determine what will attract these workers to skilled positions, what supports are needed to retain these workers, and what will motivate these workers to develop more skills.

Aggressive Recruiting. Participants suggested that hiring managers do not have the authority, time, or budget to recruit as aggressively as their competition in private industry. They mentioned that competitors will cold-call employees on the job to offer them higher paying positions.

Difficulty Finding Applicants with In-Demand Skills. Organizations are having difficulty identifying and attracting candidates with particular skill sets and technical experience (e.g., operations, maintenance,

or management jobs). These individuals are in demand among several industries, most of which can offer higher wages than the transportation industry. In addition to skilled workers, organizations are struggling to find individuals who are in the middle of their careers (i.e., 5-15 years) because they tend to refrain from moving positions. These middle-career individuals are in demand because they are a low risk for initial turnover unlike younger workers who choose a position and then may quickly decide they do not like it. Individuals in the middle of their careers are also a low risk for retirement unlike older workers. Typically, these workers have families and obligations that force them to maintain steady employment.

Another challenge that often occurs, when hiring managers for transportation jobs, is balancing the need for technical knowledge of the organization with the need for leadership and managerial skills. Participants noted that there is often a gap between the technical abilities and the "people" skills that applicants possess when applying for managerial positions. For instance, one participant said, "The challenge is finding cross-functionally trained leaders with an understanding of how to manage different functions. Managers are, at times, put in place because of their technical skills, not managerial people skills."

Transportation Issues. The geographic location of the work poses a recruitment challenge for some of our participants. Requiring employees to use personal transportation or make a significant commute deters many applicants from accepting a job offer. This might occur because some applicants, especially in urban areas, do not have personal transportation.

4.2   Industry Strategies. Researchers and program managers identify the following programmatic strategies when describing industry efforts to "Increase the Number of Applicants" (see Exhibit 4-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 4-2 Industry Strategies: Increasing the Number of Applicants	
Strategy	*Strategy Description*
Expand the Recruiting Horizon	Organizations are posting job opportunities in trade magazines such as *Construction* and *Better Roads* magazines, on outdoor billboard advertisements, in flyers at unemployment offices, and on posters placed in convenience stores. The idea is to target an audience, determine where that audience can typically be found, and advertise job opportunities at these locations. If an organization is looking for an unemployed road construction worker who likes being outdoors and does not expect above-average compensation, the recommendations mentioned above are applicable. Advertising on the radio has also been found to be effective. Another place where active and passive job seekers can be found is on the Internet. To attract active job seekers, some organizations have replaced basic job search websites with more advanced job aggregator websites to upload their job postings. Job aggregator websites collect job postings from other websites and aggregate them into one database. Job aggregators often include jobs from big-name job search websites (e.g., Monster.com, CareerBuilder.com) as well as jobs from employer websites. Examples of job aggregators include: Indeed.com, SimplyHired.com, and TheLadders.com which are specifically geared toward upper-level managers and executives. For

| Exhibit 4-2 (Continued) Industry Strategies: Increasing the Number of Applicants ||
Strategy	Strategy Description
	passive job seekers, organizations develop advertisements to be placed on websites, such as Google, Facebook.com, and ESPN.com.
Host Career Days	The construction industry has begun hosting Construction Career Days across the country. These career days give students the opportunity to learn about construction jobs, become inspired to use as well as learn how to operate specific construction equipment (e.g., backhoes, excavators, jackhammers, pavers), learn about challenges of the job, and receive information on colleges, trade schools, and certification programs that serve the construction industry.
Implement Employee Referral Programs	Organizations feel that some of their best performers come from employee referrals. These organizations have instituted pay bonuses for the referring employee whose referral was hired and stayed employed longer than 6 months. Current employees will be more likely to refer people to jobs if they have a financial incentive. The 6 month cut-off is set because this is generally where organizations see turnover percentages decrease so at this point there is a higher chance that the organization will see a return-on-investment from the hire. Employee referrals are also beneficial because they reduce some costs for recruiters who are often seeking new employees from cold calling or large expensive events. Furthermore, incumbents can identify effective matches for jobs because they typically have more direct knowledge of the job requirements than external recruiters who do not perform the job on a daily basis.
Tailor Advertising Efforts	Our findings suggested that organizations have begun to tailor their job advertisements to fit the fast-paced, short attention span of the typical job seeker. They are now using brief descriptions or "snap-shots" to quickly highlight the industry, major tasks, and positive aspects of the job. This has proven to be an effective tactic as organizations have found that potential job seekers, typically looking at hundreds of job advertisements at a time, are more likely to read shorter advertisements than longer ones. When developing these snapshots for hard-to-fill positions (e.g., maintenance, engineers), organizations have conducted research on factors that attract and retain individuals who typically fill those positions. Universities and private consultants are sometimes brought in to conduct this research. Some organizations are even obtaining lists from the state of individuals who have recently received a license that is required for a hard-to-fill position and sending those individuals information about job opportunities.
Consider Non-Traditional Hires	A number of DOTs have begun to explicitly target non-traditional hires to expand the thinking of current agency staff and better prepare the agency for the challenges of the 21st century. Minorities, lower-income people, and people with disabilities are recruitment targets in Minnesota and elsewhere. Retirees, re-hires, ex-offenders, and even candidates from other industries can also be effective sources for recruitment. In addition, employees from other industries may have the basic skills sets to quickly learn the requirements of the job; the latter are a particularly practical source in finance and other fields in the DOT with a smaller "bench." Thus, agencies have begun to recognize the value of hiring individuals previously unconsidered.

Exhibit 4-2 (Continued) Industry Strategies: Increasing the Number of Applicants	
Strategy	*Strategy Description*
Advertise in Foreign Languages	Organizations are creating advertisements in non-English languages, foreign languages commonly used in their communities, in an attempt to attract alternate populations. They have had success placing these advertisements in post offices, banks, and other community locations where non-English speakers may often visit. One association mentioned that contractors send bilingual recruiters door-to-door in historically minority-populated neighborhoods to talk to families about the benefits of starting a career in transportation. When organizations interview these applicants, the organizations advertise the fact that they use bilingual manuals, instructions, and safety signs. Organizations that provide multi-language resources are better able to convey a culturally diverse work environment. Some contractors reported establishing demographic recruiting goals that exceed those mandated by the government.
Partner with Source Organizations to Increase Numbers	A source organization is an entity with which potential applicants are heavily involved whether it is through education, enlistment, membership, or incarceration. Organizations have found partnerships with elementary and middle schools to also be advantageous for their efforts at increasing industry interest among youth. Research shows that image formation, career exploration, and job interests start at a very early age, and exposure to careers in childhood inculcates interest to pursue that field later in life. *Engineering is Elementary* offers resources for introducing engineering early. In addition to schools, organizations work with foster care programs to provide careers for youth in foster care settings.

Organizations also partner with local youth development and agricultural groups like 4-H. The type of work conducted in transportation jobs may appeal more to youth already involved with hands-on tasks via club activities. Government organizations may provide recognition and incentives to companies for training and employing these youth. Another place to target young people who enjoy working outdoors and with their hands is at technical schools. Many organizations are setting up reoccurring meetings with technical schools to exchange information about the skills the schools are teaching relative to the skills that are needed by the organization. Establishing these partnerships allows organizations to identify and recruit the top talent. Mechanics, welders, and technical operators have been successfully hired based on partnerships with trade and technical schools.

Organizations have had success partnering with local universities to determine how many students, typically in engineering fields, will be graduating and the type of opportunities and work environments these students are seeking. The advantage of working with professors from universities is that they are typically better in tune with their students' expectations in terms of compensation, work schedule, and work environment. Organizations also participate in on-campus recruitment and career fairs for high school and college students. While colleges are heavily represented in high school career fairs, transportation organizations tend to only attend specialized trade fairs or college career fairs. Increasing representation in high school career fairs has |

Exhibit 4-2 (Continued) **Industry Strategies: Increasing the Number of Applicants**	
Strategy	*Strategy Description*
	the potential to greatly assist recruitment efforts. To attract middle-career applicants, some organizations partner with Transition Assistance Programs (TAP) that help honorably discharged military personnel join the workforce. Organizations are invited to provide instruction to soldiers in how to develop a resume, fill out applications, and respond to interview questions. In addition to providing instruction, organizations work with TAP to interview and recruit these individuals. One organization in our study partnered with a selection firm to select high-potential candidates coming out of the military. In addition, this organization works with West Point to attract its graduates. In addition to transition assistance, organizations also partner with agencies providing job re-entry programs for former offenders in order to find workers with significant job experience. Potential recruits may be experienced in physical and outdoor labor, and by forming partnerships with Job Re-Entry agencies, the industry can better recruit disadvantaged, unskilled workers and also help support the community. In some states, the organizations may receive financial incentives from the government for using these programs. These financial incentives typically come from state workforce committees, which can be used to introduce organizations to source organizations (e.g., universities), as well as help them remove regulatory roadblocks in the hiring process.
Integrate with Source Organizations	In terms of short turn-around recruiting efforts, participating organizations have begun to use career fairs more strategically. For example, organizations have benefited from attending career fairs even when they do not have open positions, by forming long-standing relationships with quality talent. The organizations can provide information on how to keep in contact so that when job opportunities become available, career fair attendees can apply. Organizations have also started traveling to states or cities that are having economic or employment issues and offering applicants jobs if they are willing to relocate. Organizations are also looking for ways to offer telecommuting jobs to individuals who might be unwilling to move. Lastly, organizations are giving their hiring managers permission to make job offers during the actual career fair. Organizations have found that high-potential applicants are quickly recruited by competitors even if they were originally interested in the organization at the career fair. The ability to check resumes, interview, confer with colleagues, and make an offer allows the hiring manager to secure top talent early. One-stop career centers have also been effective. A one-stop career center is when several organizations in an industry, usually through an association, coordinate to co-fund a center where applicants apply, are trained, and then placed in a position at one of the organizations. Associations can set up offices around metropolitan areas that seek to streamline the process of getting a candidate from the application stage to the hiring decision stage. Applicants

Exhibit 4-2 (Continued) Industry Strategies: Increasing the Number of Applicants	
Strategy	*Strategy Description*
	typically sit at a computer kiosk and fill out electronic applications with help from an attendant. The ease of the application process makes it attractive to a wider population of job seekers. For long-term recruiting efforts, organizations allow schools to bring children and parents to work sites for field trips, give guest lectures at schools and write articles for the school newspaper. These initiatives are meant to educate students regarding the diversity of jobs within transportation. Students are engaged with activities that show them how their skill sets, in math for example, are integral to transportation jobs. The oil industry, which was experiencing similar workforce challenges, pulled together volunteers from many different oil-related career fields to create a traveling information task force to conduct all the initiatives previously mentioned. In addition to educating students, these initiatives provide a venue where organizations can encourage teachers, career counselors, and parents to champion transportation as a viable career for the students. They have discussions, provide pamphlets, and direct interested persons to organization websites. Some companies offer breakfast and lunch presentations during the summer where teachers are invited to come eat and learn about the benefits of transportation. Advertisements need to focus on convincing parents of the benefit of transportation jobs. For example, the U.S. Army has had a number of successful TV commercials that target parents and attempt to shape their opinion about their child's enlistment.
Harness Technology	To prepare managers for recruiting, organizations have developed pages on the organization's intranet to serve as a central repository for recruitment tips and tools. In addition, these pages allow for the sharing of lessons learned on how to effectively recruit new workers. To help recruiters and managers who are actively recruiting, organizations are purchasing software that allows for resume searches by skill. These software packages can also organize the resumes that come in from multiple job websites like Monster and JobFox. For job seekers, organizations have developed recruiting web pages on the organization's website. Applicants can learn more about the opportunities and benefits of a career in transportation as well as apply and submit their resume to all open transportation job opportunities. One feature of the website is that it allows candidates to apply at one time for all the positions for which they qualify by using the shopping cart application. Organizations have found that this technique creates a larger pool of qualified candidates for contractors to review than separate applications systems which may deter candidates from applying to multiple jobs. For job seekers without personal computers, organizations utilize phone recruiting services that allow candidates to dial a number and describe their resume profile in their native language. Candidate profiles are recorded in a computer database that can be accessed by employers online. Additionally, employers can search an organized list of candidate profiles and contact the most qualified candidate directly. Organizations also provide geographic

Exhibit 4-2 (Continued) Industry Strategies: Increasing the Number of Applicants	
Strategy	*Strategy Description*
	directions which list locations where candidates can use computers and apply for jobs online. Locations such as libraries and cafes provide the general public with the necessary hardware and software to access the internet.
Utilize Social Networking	Social networking is another effective way to reach passive candidates. By creating accounts or starting groups on social networking websites, organizations can post job offerings, video, audio, and news, as well as answer questions and request resumes from potential applicants. Using a popular medium to present visual content about the positive aspects of an open position may provide an applicant with the information he/she needs to make an informed decision about applying. Visual content and employee testimonials may also combat any misperceptions potential applicants may have about the work in which they would be involved or the sort of people they would be working with. MySpace, Facebook, and Twitter are social networking sites that have been found to be effective by organizations. The advertisements on these sites can be directly linked to a recruiting campaign website.

4.3   Workforce Practices. Thirty-five workforce practices that were designed to "Increase the Number of Applicants" within transportation agencies were reviewed, and we identified two workforce practices that were the most notable within this context:

- The Kentucky Transportation Cabinet Civil Engineering Scholarship Program
- Minnesota DOT Community Advisors on Recruitment and Retention Solutions (CARRS).

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

The Kentucky Transportation Cabinet Civil Engineering Scholarship Program.

The Kentucky Transportation Cabinet (KYTC) has a workforce of approximately 4,370 employees. KYTC's Civil Engineering Scholarship Program was established in 1948 to address the growing need for quality civil engineers and the difficulty KYTC was having in recruiting sufficient numbers of civil engineers. Prior to the foundation of the Civil Engineering Scholarship Program, KYTC officials visited the College of Engineering at the University of Kentucky to recruit civil engineers, but had limited success.

KYTC provides scholarship money and summer employment to undergraduate college students in exchange for full-time employment with KYTC after college graduation. High school graduates who have been awarded the scholarship are provided scholarship money each semester of college that covers tuition, and scholarship recipients may work for KYTC as conditional employees with compensation, minus benefits, during summers. After college graduation, scholarship recipients get priority over job applicants for job placement in order to fulfill KYTC's commitment. The commitment required is 1 year of full-time employment for every 1 year of scholarship money received. Scholarship recipients who do not complete the program or commitment (e.g., drop out of classes or take another job post graduation) must immediately pay back 100% of the money they have received or a large interest-rate penalty is charged.

> ### *The Kentucky Transportation Cabinet Civil Engineering Scholarship Program*
> - **Job Type:** Engineers
> - **ROI:** Short- to mid-term
> - **Generation:** Younger
> - **Key Program Highlights:**
>   - Scholarships are given to undergraduate college students
>   - Scholarship recipients receive money for college tuition in exchange for a full year of employment for each year of scholarship money received
>   - 80 students receive scholarship money each year

KYTC, on average, funds 15 new college freshmen each year and a few additional students in other stages of their college careers. On average, there are about 80 students total receiving scholarship money from KYTC at a given time. The scholarship program currently costs KYTC about $40,400 to fund each student through their undergraduate education and requires 2 full-time employees to run the program. Approximately 67% of all scholarship recipients stay in the program for the full length of college and commitment to the agency. The program has significantly helped KYTC to staff quality civil engineers across the state. In fact, the majority of management and engineering employees currently at KTYC have been scholarship recipients themselves.

Minnesota DOT Community Advisors on Recruitment and Retention Solutions (CARRS).
The Minnesota Department of Transportation (Mn/DOT) employs 5,033 people in a variety of employment conditions (i.e., temporary, unlimited, full-time, part-time). Mn/DOT developed Minnesota Community Advisors on Recruitment and Retention Solutions (MnCARRS) to build lasting relationships within the various underrepresented communities that Mn/DOT serves. With only 20% female and barely 7% minority employees, Mn/DOT was facing challenges in recruiting and retaining a qualified and diverse workforce. Mn/DOT was not accomplishing its goals through solely attending job fairs and realized it needed to get more involved in the minority communities and engage more community members in their recruitment processes. Thus, the desire to establish a community partnership through the implementation of MnCARRS stemmed from Mn/DOT's goal to intensify its diversity-focused recruiting efforts.

> ***Minnesota DOT Community Advisors on Recruitment and Retention Solutions (CARRS)***
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   o Includes partnering with 18 local, predominantly minority organizations
>   o Provides greater visibility of the agency in minority communities
>   o Helps the agency recruit and maintain a diverse employee base

MnCARRS represents all minority communities, including women, veterans, and people with disabilities. The partnership includes approximately 18 local, predominantly minority or women-managed organizations. Mn/DOT made an intentional effort to work with organizations and employees who had leverage and credibility in those minority communities. Members of MnCARRS from these organizations sponsor community information meetings to discuss various job openings. Job postings sent to the MnCARRS members are in turn disseminated to their individual networks of minority individuals in the community. Mn/DOT launched the MnCARRS program with a short-term, one-year objective to recruit and hire a qualified diverse group of candidates for 50–60 open technician positions tasked with winter snow plowing. Currently, MnCARRS has resulted in a total of 30 minority hires in the past year.

Mn/DOT conducted information sessions in the community to educate their partners about the agency and its needs and requirements. The agency also put together a PowerPoint presentation that covered state jobs and methods of interviewing and applying for state jobs. The presentation offered tutoring in math for prospective applicants. MnCARRS members have provided Mn/DOT with greater visibility in minority communities, as well as an opportunity for these populations to learn more about the agency. Several MnCARRS members are serving as community mentors for the temporary Transportation Associate (TA) candidates hired at Mn/DOT. Another MnCARRS team member is now formally assisting Mn/DOT Human Resources (HR) with integrating diversity into the competency-based interview training for Mn/DOT supervisors. Finally, MnCARRS serves as a positive voice within a larger diverse community about Mn/DOT and its efforts to diversify its workforce and partner with their communities. MnCARRS has helped alleviate several workforce issues, specifically recruiting and maintaining a diverse employee base by broadening Mn/DOT's recruiting opportunities and avenues for reaching a larger and more diverse audience. MnCARRS has helped Mn/DOT get the news out that the agency is interested in hiring minorities for jobs with current vacancies. MnCARRS also prompted Mn/DOT to review the agency's hiring process and utilize trial programs to supplement the normal qualification and interview process.

Implementing MnCARRS in the agency was accomplished with minimal costs, primarily time and resources. Mn/DOT's HR staff did all the work and the partners that MnCARRS uses are volunteers.

Mn/DOT maintains specific reports related to the implementation, maintenance, and success of its MnCARRS group. The agency also developed a best practices document that is being shared with Minnesota's State HR and Finance Office. This document highlights "Do's" and "Don'ts" learned from the MnCARRS community group about recruiting and retaining a diverse workforce.

Other Example Practices

To serve as an additional resource for agencies interested in "Increasing the Number of Applicants," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.
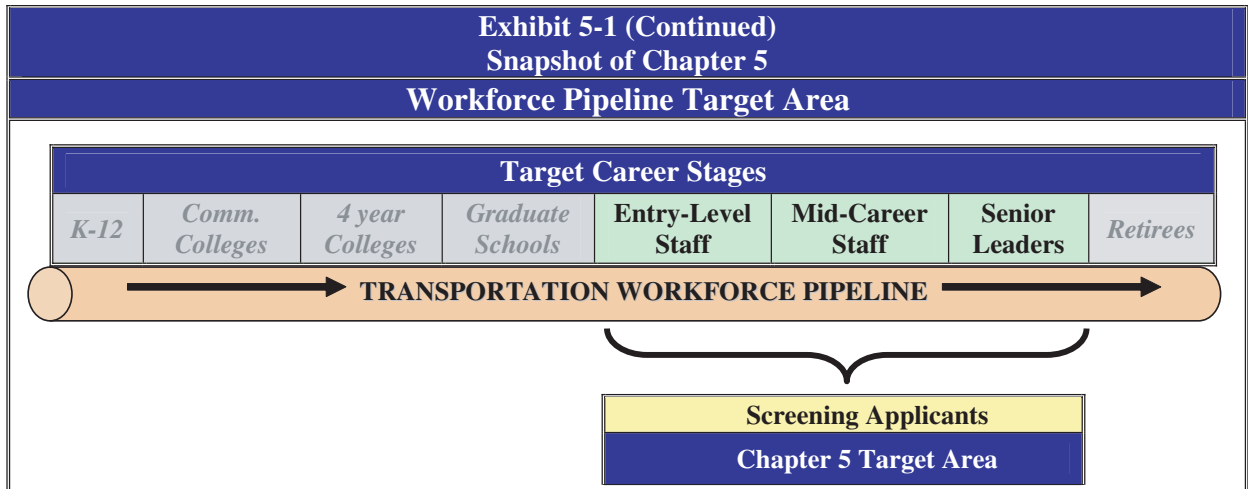
- Arkansas EAST Initiative
- Adopting Flexible and Appealing Hiring Procedures
- Aggressive Outreach Efforts
- Bonuses for Recruitment and Retention
- Caltrans Out-of-State Recruitment Teams Program
- Comprehensive Recruitment Plans
- Construction Career Days
- Creating More Flexible Job Descriptions
- Educate Minority Communities via Community Associations
- Employee Referral Program
- Exit Interviews and Rebound Hiring
- Job Advertisements
- Job Hotline and Email Address
- Job Search through Social Networking Sites
- MentorNet
- Missouri Information Technology Services Department
- Norman Y. Mineta International Institute for Surface Transportation Policy Studies
- Operation Second Chance

- Partnering with Technical Schools
- Presidential Management Fellows
- Project Reentry
- Recruitment from Community Colleges for Transportation and Transit Agency Personnel
- Recruiting Former Military
- Recruitment of Older Workers
- Regional Transportation District Bus Driver Shortage Program
- State of California Boomerang Program
- Summer Transportation Internship Program for Diverse Groups
- Summer Transportation Institute
- Summer Transportation Institute for High School Freshmen and Sophomores
- Targeted Recruitment
- Temporary Hiring Centers
- The Welfare to Work Partnership
- Army Recruiting Portals, "GoArmy.com, iRecruiter"

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 5: Screening Applicants

Selecting and hiring qualified employees are essential functions for the health of any organization. To aid in the selection and hiring of employees, agencies should implement initiatives to accurately and efficiently screen and select the individuals who are most qualified for job openings. In this chapter, we present challenges, strategies, and workforce practices related to "Screening Applicants." Exhibit 5-1 provides a snapshot of the chapter.

Exhibit 5-1 Snapshot of Chapter 5	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..……...…..**40** ▪ **Lack of Recruiting Process** ▪ **Bureaucratic Hiring Policies** ▪ **Aging Workers and Technology** ▪ **Effect of Economic Downturn** **Industry Strategies**…………………**41** ▪ **Prepare Hiring Managers to Screen** ▪ **Use Multiple Interviewers** ▪ **Integrate Human Resources in the Hiring Process** ▪ **Screen for Eligibility** ▪ **Screen for Competency** ▪ **Screen for "Fit"** **Workforce Practices**…..……………**43** ▪ **Pennsylvania DOT Civil Engineer Training (CET) Program**	 Forward-thinking transportation organizations are revising their recruitment practices and policies to make it more of a collaborative effort between hiring managers and recruiting teams, while also validating entry requirements and tests.
	Definition of Screening Applicants: Involves identifying avenues for enhancing the process of screening applicants from entry-level staff to senior leaders. The goal of these efforts is to help organizations accurately and efficiently screen and select the individuals who are most qualified for a job opening. As a result, these practices help to establish a better qualified workforce.

Exhibit 5-1 (Continued) Snapshot of Chapter 5							
Workforce Pipeline Target Area							
Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Screening Applicants

Chapter 5 Target Area

5.1   Workforce Challenges. Programs related to "Screening Applicants" are typically designed to address challenges associated with accurately and efficiently screening and selecting the individuals who are most qualified for job openings. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Lack of Recruiting Process. Slightly less than half of the participants in one of our studies indicated that their organization uses a formal recruiting process on an "as needed" basis (Cronin et al., 2007). It is interesting to note that one-quarter of participants suggested that their organization never engages in recruitment activities as all applicants come through "word of mouth." Some of these organizations fail to see the value in constantly updating and maintaining online job listings, company website listings, newspaper ads, and other job advertisements. Still other organizations cannot afford to pay for the costs associated with strategic recruitment initiatives. This is especially true for organizations working in the public sector. When it comes to attracting candidates, they seem to take the "kitchen sink" approach and implement a handful of non-strategic initiatives instead of evaluating which of their advertisements or recruiting methods are most successful in attracting applicants from their target population. When the needs of a hiring manager change, the human resource representative must find all the locations where the open position is advertised and make the appropriate updates.

Bureaucratic Hiring Policies. This factor refers to the complex bureaucracy within the organization that often results in a slow recruitment process. Several participants acknowledged that successfully hiring a candidate could take several weeks because their organizations require several levels of approval for hiring. Potential candidates typically find another position with a competitor while waiting for these approvals to take place. Some hiring managers, who feel the pressure to maintain productivity, circumvent the recruitment process by determining who they are going to hire several weeks before they open up the position for applications. This type of non-strategic approach can lead to new hires who do not have the skill sets to be successful long-term. This informal approach can also have a negative impact on the organization's diversity goals since individuals tend to hire those "similar to themselves" when using a non-structured process for hiring.

Aging Workers and Technology. Likewise, participants indicated that a major generational difference is evident in the area of technology. There are huge gaps in the technological skills and abilities among employees, most notably between older and younger workers. Organizations are transforming the original face-to-face approach of recruitment to an entirely online process called e-recruiting. While this new

process caters to the younger generation, participants felt that it can exclude older generations who do not have enough experience with the technology to easily apply for open positions.

Effect of Economic Downturn. Participants indicated that there is a shift from an applicant's market to an employer's market during times of economic downturn. This shift leads to a rising applicant pool but fewer job openings. As a result, organizations no longer need to sell themselves to compete, but rather look for candidates to sell their skill sets and experiences to the organization. However, larger applicant pools make it more difficult for hiring managers to identify high-potential candidates because they are tasked with sifting through numerous resumes and applications from many candidates who would not be a good fit for the job. In addition, with larger applicant pools, the definition and benchmark for a high-potential candidate becomes more stringent. Organizations also mentioned that, during times of economic downturn, hiring freezes have ripple effects that make future recruiting difficult. One of these challenges is maintaining relationships with universities and career fairs during the freeze. At times, career fair organizers have waiting lists of employers that would like to take a spot at the career fair. As a result, a hiring freeze for one organization is another organization's chance to move up on the waiting list and take their spot.

5.2   Industry Strategies.   Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Screening Applicants" (see Exhibit 5-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 5-2	
Industry Strategies: Screening Applicants	
Strategy	*Strategy Description*
Prepare Hiring Managers to Screen	Many organizations indicated they are administering training to recruiters and hiring managers to help them recruit individuals of different generations, cultures, and genders. These courses instruct employees on the effective and ineffective ways to construct job advertisements and interview applicants. This training is helpful in situations where managers have to screen "walk-on" candidates. "Walk-on" candidates are those who walk up to hiring managers on work sites and ask to apply for a job. This situation can put technical managers in screening and hiring situations where, before training, they may not have the necessary skills to communicate effectively or make informed decisions. These training sessions also prepare hiring managers to market the organization, a specific department, available job opportunities, and the benefits of joining the team.
Use Multiple Interviewers	Organizations suggested they are involving more than just the hiring manager in the interview process. Involving other managers and employees in hiring decisions increases the likelihood that the right employment decision is made. Different interview styles and questions tend to elicit more information about the candidate that can be used to make a more informed decision. This also minimizes the impact of the bias that the hiring manager may bring into the interview. It is important that the candidate is hired because of his/her "fit" with the job requirements and organization and not personality similarity to the manager. Sometimes the additional interviewer is a human resource (HR) professional. These professionals can either interview the applicant along with the hiring manager or separately but it is important that they work

Exhibit 5-2 (Continued) **Industry Strategies: Screening Applicants**	
Strategy	*Strategy Description*
	collaboratively to come to an informed decision. This type of joint effort is critical because the hiring manager tends to primarily focus on the technical skills of the applicant while the HR professionals are assessing if the applicant is a good fit for the immediate team and the organization.
Integrate Human Resources in the Hiring Process	Participating organizations indicated they are ensuring that hiring managers and recruiting teams collaborate while they are sourcing, identifying, and hiring. Organizations have also found that rotating recruiters from job sites to headquarters will help to improve the screening of "walk-on," "word-of-mouth," and "referral" candidates. Recruiting teams (e.g., managers, recruiters) can also help to manage the impression the organization is giving during the recruiting process. Some organizations call all the applicants once a week until a decision is made and then call the applicant to let them know whether or not they are being offered a position. If the person did not get the job, they let them know why and, if possible, suggest other positions where the individual may be a viable candidate. This engagement during a recruiting process is rare and stands out to an applicant, leaving a positive impression that the organization to which they are applying really cares about them. Applicants are more likely to continue to apply or tell other people to apply to the organization even when they were not initially selected.
Screen for Eligibility	Organizations have purchased software that asks online applicants to respond to a short set of questions that relate to job requirements for the open position. If the applicant answers a question in a way that indicates he/she is not qualified, he/she is notified and encouraged not to upload a resume to the website. This practice saves the organization the time and expense of reading resumes of unqualified applicants. Once an applicant applies and uploads their resume, organizations have started conducting background checks to determine if the information is accurate. Names of schools, certifications, licenses, past job experience, relationships with former employers, and arrest history are possible facts to verify.
Screen for Competency	Organizations are moving away from matrix or check-box style screening which typically involves the hiring manager or recruiter asking "yes" or "no" questions regarding the applicant's experience. Performance or behaviorally-based interviews require applicants to respond to problem solving questions where they indicate, in several sentences, how they would respond to a typical work-related situation. Positive and negative responses to these questions are pre-determined by subject matter experts in the organization. Pre-determined answers help hiring managers and recruiters quickly decide if an applicant possesses the skills, work ethic, and customer service required to perform the job. Assessments can either be paper and pencil or computer-based. One organization uses a managerial assessment process for entry-level positions to help hiring managers identify high potential applicants who could be future candidates for managerial positions. Although some organizations are discouraged from using physical abilities tests because of state laws that govern applicant assessments, others find that

Exhibit 5-2 (Continued) Industry Strategies: Screening Applicants	
Strategy	*Strategy Description*
	physical abilities tests are beneficial for positions that require constant physical activity. For example, if the job requires a person to lift 50 lbs. over his/her head, organizations are asking applicants to lift this amount of weight during the interview. One organization has their applicants cut a log in half with a chain saw. This organization has found that some applicants, who indicated several years of experience with chain saws, do not know how to start the saw when asked. Organizations that have adopted these practices have also seen a decline in their worker compensation cases.
Screen for "Fit"	Organizations have also begun to focus efforts on including realistic job previews (RJPs) in job advertisements. A realistic job preview is where organizations, verbally or through video, provide a description of a typical work day for a person in the open position. Organizations sometimes even bring the person to the job site. They are careful to describe not only the good parts of the job but also the challenging and unpleasant aspects. If an applicant does not feel that he/she can handle the challenges and unpleasant parts of the job that individual will either screen himself/herself out or the organization will encourage the individual not to apply. This screening approach saves the applicant from having a bad experience and the organization from wasting time and money on additional recruitment efforts. Some candidates will appreciate the honesty and perceive the organization as a forthright employer.

5.3   **Workforce Practices.** Fourteen workforce practices that were designed to assist in making the process of "Screening Applicants" within transportation agencies efficient and effective were reviewed, and we identified one workforce practice that was noteworthy within this context:

- Pennsylvania DOT Civil Engineer Training (CET) Program

For this practice, we conducted a case study. A summary of the case study is presented below. The full case study can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study description details each practice's background, implementation, maintenance, evaluation, and transferability.

Pennsylvania DOT Civil Engineer Training (CET) Program.
The Pennsylvania Department of Transportation (PennDOT) has approximately 12,000 employees, not including consultants or contractors, of which roughly 10,500 are engaged in maintenance, restoration, and expansion of the highway system. PennDOT has created the Civil Engineer Training (CET) program to identify, recruit, and retain civil engineers by allowing program participants to gain 1 year of work experience rotating through the phases of civil engineering (CE) work at PennDOT. CET participants, or CETs, are inducted in a class of 25-35 trainees; each trainee must pass department tests and go through orientation and training programs to become acclimated to their work with PennDOT before they begin their year-long rotation. After the trainee completes all the requirements associated with his/her 12 months of training and job rotations, the candidate becomes eligible for full-time permanent status as a civil engineer with PennDOT.

> ***Pennsylvania DOT Civil Engineer Training (CET) Program***
> - **Job Type:** Engineers
> - **ROI:** Mid-term
> - **Generation:** Younger
> - **Key Program Highlights:**
>   - Trainees are exposed to different phases of Civil Engineering work through a 12-month job rotational period before full-time employment within a chosen area of the agency
>   - Class sizes range between 25-35 trainees
>   - Helps agency increase applicant pool and retention rates, while improving organizational performance

The CET program equips candidates with a supervisor, training coordinator, and a mentor to familiarize them with PennDOT and guide their career development. PennDOT created a manual for the CET program discussing the roles and responsibilities of the CET, the work phases CETs will experience (e.g., the planning and programming phase, design phase, etc.), the training courses CETs will take and activities in which they will participate, and evaluation forms for CETs to track their own progress and evaluate the CET program. Additionally, PennDOT requires CETs to maintain a daily log of activities in the form of a journal, which serves as a record for PennDOT and for the trainee to track his or her progress.

The CET program was implemented by the Workforce Division of PennDOT. The Workforce Division brought Subject Matter Experts (SMEs) together from various DOT disciplines to help create the CET manual, which gets distributed to all trainees. PennDOT's Workforce Division also partnered with the Civil Service Commission to streamline the CET application process, which can otherwise be cumbersome, and to ensure the validity of the CET entrance exam. PennDOT communicates the practice to employees and to college students, the target audience of the CET program, through learning institutions, the PennDOT website and internally through PennDOT's intranet site, job fairs, and the Civil Service Office in the Commonwealth of Pennsylvania. All steps of implementing the CET program have been performed internally, and thus the only cost to PennDOT has been in employee time and resources.

To assess the success of the CET program, PennDOT uses a number of measures: (1) surveying CETs and their supervisors for feedback, (2) examining trainees' performance reviews at the end of each trainee job rotation, (3) reading CETs' journals, and (4) examining CET completion rates of various markers in the CET program. Based on the feedback from the aforementioned methods, and on the increasing applicant pool and rising retention rates, PennDOT considers the CET program a success and credits the program with improving organizational performance.

Other Example Practices

To serve as an additional resource for agencies interested in "Screening Applicants," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Decentralization of Human Resource Responsibility
- Eliminating Restrictive Hiring Regulations
- Hiring Panels
- Innovation in Recruiting and Hiring for Wisconsin's Department of Employee Relations
- Internet Recruitment
- New Hampshire's Computerized Hiring Process Program
- One Day Selection Workshops
- Revision of Restrictive Recruitment Policies and Practices
- Shaping Applicant Attitudes/Intentions in the Selection Process
- SonicRecruit
- Step One Survey II
- Use of Technology in Human Resource Processes
- Validating Entry Requirements and Examinations

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 6: Promoting Existing Staff

Companies often jump on the "recruitment bandwagon" when vacancies occur, failing to identify untapped talent within the organization. Instead, organizations should look for opportunities to promote existing staff. In this chapter, we present challenges, strategies, and workforce practices related to "Promoting Existing Staff." Exhibit 6-1 provides a snapshot of the chapter.

Exhibit 6-1 Snapshot of Chapter 6	
Chapter Road Map	**Concept and Definition**
Workforce Challenges……..…....…..**47** ▪ **Misperceptions of Advancement Potential** ▪ **Lack of Organizational Commitment** **Industry Strategies**………….……**47** ▪ **Recruit Existing Employees** ▪ **Develop Employees and Maintain Employee Career Paths** ▪ **Create a Job Rotation Program** ▪ **Develop a Staffing Plan** **Workforce Practices**…...…….……**49** ▪ **North Carolina DOT Supervisor Academy**	 Many transportation organizations are developing and promoting existing staff. The benefit of promoting internal staff is two-fold: (1) it saves recruitment and training dollars and (2) it contributes to retention of staff by helping them to see opportunities for advancement and their value to the organization.
	Definition of Promoting Existing Staff: Involves identifying high-performing employees who are likely to succeed at the next level within the organization. The goal of these efforts is to help organizations effectively, efficiently close workforce gaps.
Workforce Pipeline Target Area	

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Promoting Existing Staff

Chapter 6 Target Area

6.1   **Workforce Challenges.** Programs related to "Promoting Existing Staff" are typically designed to address challenges associated with closing workforce gaps and selecting the most qualified individuals who are likely to succeed at the next level within the organization. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Misperceptions of Advancement Potential. Over one-half of participants in one study indicated that lack of awareness regarding advancement potential has at least some impact on why young people are not pursuing jobs in transportation (Cronin et al., 2007). The misperception is that new employees will always be performing entry-level tasks. This was also suggested as the greatest challenge for recruiting ethnic minorities.

Lack of Organizational Commitment. In an attempt to broaden their skill set, our findings suggested that individuals from younger generations feel that they must leave an organization to gain new experiences. Many companies focus their talent-management programs on employees when they are first hired and then on their senior leaders, leaving a gap during the early and prime career years. A serious loss of key talent, however, takes place during this in-between time. (Galinsky, Carter, and Bond, 2008). Organizations also indicated that the younger workforce is not as interested in staying with one organization or working longer hours without additional compensation. While employee desire for positions with greater responsibility dipped in 1997, it has rebounded in recent years and is now the same for both women and men, but both men and women are seeking flexibility and a supportive work environment for balancing their other priorities (Galinsky, Aumann, and Bond, 2008). The seniority-based model for success has been challenged by many organizational initiatives (e.g., diversity), yet organizations are often challenged with getting younger workers to look at their job as a long-term career instead of a temporary stepping stone to a more prestigious position. Furthermore, older managers who see younger workers as less committed to their jobs may avoid investing in a mentoring relationship with a younger employee out of concern that the younger worker may leave the organization at any moment. Organizations are challenged with training managers in how to productively lead and work with younger employees. Thus, while younger workers are believed to have higher turnover intentions at any given point in time than older workers, this belief itself may result in behaviors (e.g., failure to mentor) that only further perpetuate the problem of retaining younger skilled talent.

6.2   **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Promoting Existing Staff" (see Exhibit 6-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 6-2 Industry Strategies: Promoting Existing Staff	
Strategy	*Strategy Description*
Recruit Existing Employees	When it comes to filling vacancies, especially for management positions, participant organizations are looking at existing employees first before looking to outside sources. The idea behind selecting applicants from within an organization is that these individuals already understand many facets of the organization and will require less on-boarding and training. Some participants noted that as many as 85 to 95% of their senior management/directors are

Exhibit 6-2 (Continued) **Industry Strategies: Promoting Existing Staff**	
Strategy	*Strategy Description*
	internal promotions. One organization in particular sets hiring targets (e.g., 50% internal hires, 50% external hires) in order to have a mix of new talent with strong leadership skills, and internal hires with strong technical skills. In some organizations, when a supervisor leaves the organization, their highest potential subordinate is promoted into the position. This sets off a similar chain of promotions until an entry-level position is left vacant. With this method, the hiring manager and recruiter are responsible for filling a lower skill level (e.g., entry-level) position instead of a skilled supervisor position. The organization reports there is less risk and a larger applicant pool at the lower level making it easier to fill the position.
Develop Employees and Maintain Employee Career Paths	As transit systems have discovered, DOTs should consider making in-house recruiting a priority to promote from within and ensure that growth opportunities are available to employees (KFH Group, Inc., 2008). Results of a recent study indicate that career paths improve job satisfaction, employee motivation, and employee commitment (Griffin et al., 2000). Furthermore, results from analyses of 21 turnover studies indicate that receiving promotions is directly related to less employee turnover (Carson et al., 1994). To prepare employees for advancement, agencies need to implement structured employee development practices.
Create a Job Rotation Program	Job rotation programs allow employees to increase their understanding of the larger operations of the agency and to prepare for cross-functional roles and/or management jobs that require a great breadth of knowledge.
Develop a Staffing Plan	Participants suggested that hiring managers are meeting with executives and human resource professionals to identify ideal candidates (i.e., those who have the knowledge, skills, and abilities required) for each critical position in the organization. The organization then determines the factors that will recruit, train, and retain this type of individual. Finally, they attempt to determine where these individuals are located so that they can begin to recruit them. Organizations are also looking at recruiting as an annual or cyclical process as opposed to hiring for a specific project or immediate need. Ongoing hiring cycles are successfully being used in the oil industry for oil rig workers. For example, recruiting for summer projects occurs in the winter, on-boarding and training of new employees happens in the spring, and evaluation and revamping of recruiting initiatives occurs in the fall. These ongoing recruiting initiatives help companies avoid incurring the cost of repeating their recruiting efforts for positions that were successfully filled the year before. They can also interview high potential candidates several months before there is a need. This helps to avoid rushing through a recruiting process to quickly fill the position of an exiting incumbent.

6.3   **Workforce Practices.** Three workforce practices that were designed to assist in making the process of "Promoting Existing Staff" within transportation agencies efficient and effective were reviewed, and we identified one workforce practice that was the most noteworthy within this context:

- North Carolina DOT Supervisor Academy

For this practice, we conducted a case study. A summary of the case study is presented below. The full case study can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study description details each practice's background, implementation, maintenance, evaluation, and transferability.

North Carolina DOT Supervisor Academy. The North Carolina Department of Transportation (NCDOT) employs roughly 13,000 people, of which 7,500 work within the Division of Highways. In 2000, NCDOT conducted needs assessment focus groups to identify reasons for employee morale issues. One thing NCDOT discovered is that employees did not feel supervisors were adequate in their roles due to many of the supervisors transitioning from a technical, worker role to an oversight position with little to no training. Thus, in 2002 NCDOT conducted the first pilot of the Supervisor Academy with transportation supervisors from all the divisions. For the initial pilot, 24 transportation supervisors from across the agency were hand picked based on their aptitude, attitude, and willingness to provide feedback about the program.

> *North Carolina DOT Supervisor Academy*
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   o Two-level progressive program, consisting of *Fundamentals of Supervision* and *Advanced Supervisory Technique*
>   o Both courses are 2 weeks long, for a total of 4 weeks
>   o Participants and immediate supervisors complete a Pre- and Post-Academy Survey to assess improvement

The list of Professional Attributes addressed in the Supervisor Academy include leadership, people skills, job competency, organizational knowledge, personal growth, group dynamics, delivering services to the public, managing diversity, communication techniques, organizational skills, managing conflicts, changing roles of supervisors, personnel action, hiring/interview process, stress management, contract supervision, and dealing with on-the-job adversity. The Supervisory Academy is a two-level progressive program where participants have to go through *Fundamentals of Supervision* first and some, depending on their supervisory level, move to the advanced course. The first class, *Fundamentals of Supervision*, is for all supervisors. The next level is called *Advanced Supervisory Technique.* The second course goes into the agency's administrative role for supervisors in greater detail and is only open for the agency's "journey supervisor" and "advanced supervisor." The fundamentals course is 2 weeks, and the advanced is 2 weeks for a total of 4 weeks. To prevent employees from being away from their work for too long, NCDOT has structured the Academy so that Week 1 includes the first session, Week 2 is off, which lets the supervisor go back to the field, and then the final session is held in Week 3.

The majority of costs are design and implementation costs, which were charged by the trainer, a retired NCDOT employee. These costs were approximately $180,000. The average cost per person has been $843 since 2002. Costs include the travel; coordinating facilities; administrative cost for materials, printing, and text books; trainer-retired employee; meals; and lodging.

To assess improvement of participants, the participants and their immediate supervisors complete a pre-Academy survey and post-Academy survey. On both surveys, supervisors who participate in the Supervisor Academy provide self ratings on a scale of 1 to 10 on items such as efficiency, effectiveness, and relationships with employees. The agency has seen improvements for supervisors on these measures. While perceptions of the Supervisor Academy or other quantitative measures have not been collected, the agency reports that supervisors and employees have shown improved morale and improved responsiveness to safety and emergency concerns as a result of the program.
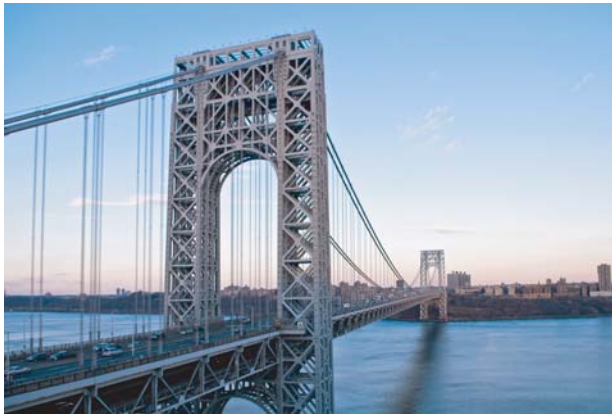
Other Example Practices

To serve as an additional resource for agencies interested in "Promoting Existing Staff," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.
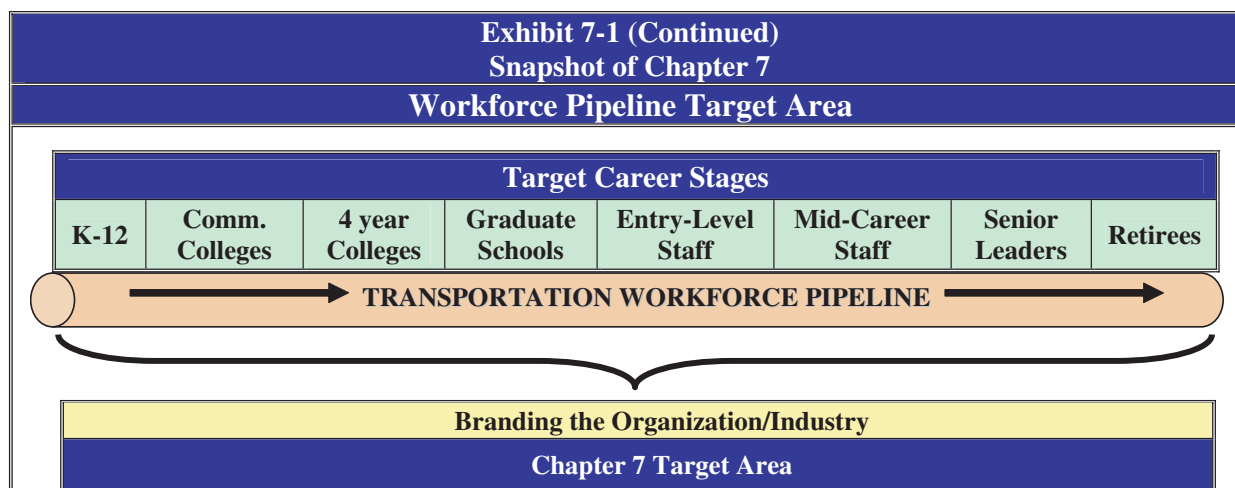
- Keystone Transit Career Ladder Partnership
- SonicPerform

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 7: Branding the Organization/Industry

In attempting to successfully target the next generation of workers, affectionately termed "Gen Y'ers" (born after 1978), transportation companies have found that some negative and inaccurate perceptions of certain transportation jobs have created additional recruitment obstacles. In fact, in a Wall Street Journal Almanac Poll of job preference by high school-aged vocational technology students, the job of construction worker ranked 248 out of 250 occupations compared (U.S. Department of Labor, 2004). One effective way to address this problem and improve recruitment success is to improve the image through rebranding of transportation jobs. Branding should be designed to raise the profile of transportation as an industry that provides esteemed career tracks. In this chapter, we present challenges, strategies, and workforce practices related to "Branding the Organization/Industry." Exhibit 7-1 provides a snapshot of the chapter.

Exhibit 7-1 Snapshot of Chapter 7	
Chapter Road Map	**Concept and Definition**
Workforce Challenges……………...…….**53** ▪ **Failure to Adequately Brand the Industry** ▪ **Employee Age, Generational Gap** ▪ **Misperceptions of the Job** ▪ **Misperceptions of the Gender/Cultural Barriers** **Industry Strategies**…..……………………**54** ▪ **Advertise the Strengths of the Organization** ▪ **Get Involved in the Community and Advertise It** ▪ **Use Real Employees in Advertisements** ▪ **Make the Jobs Appealing** ▪ **Improve Image as "Diversity Friendly"** ▪ **Use a Comprehensive Marketing Campaign** ▪ **Capitalize on Social Networking Technology** ▪ **Communicate a Message and Target an Audience** **Workforce Practices**…..……………..**56** ▪ **Iowa State University's Institute for Transportation (InTrans) Go! Magazine** ▪ **Washington State DOT Branding through Social Media**	 Cutting-edge transportation agencies have been effective in eradicating negative and inaccurate perceptions of the industry and specific jobs by improving the agency and/or industry image and awareness of the diverse jobs available at DOTs through more accessible media and re-branding of transportation jobs. **Definition of Branding the Organization/Industry:** Involves positively marketing the organization and industry in an effort to communicate the benefits of a career. The goal of these efforts is to help organizations enhance their image and attract individuals to the industry. As a result, these practices help to establish a larger and more diverse applicant pool.

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Exhibit 7-1 (Continued) Snapshot of Chapter 7							
Workforce Pipeline Target Area							

Target Career Stages							
K-12	Comm. Colleges	4 year Colleges	Graduate Schools	Entry-Level Staff	Mid-Career Staff	Senior Leaders	Retirees

TRANSPORTATION WORKFORCE PIPELINE

Branding the Organization/Industry
Chapter 7 Target Area

7.1   Workforce Challenges. Programs related to "Branding the Organization/Industry" are typically designed to address negative and inaccurate perceptions of a job or career within the industry. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Failure to Adequately Brand the Industry. The image of the transportation industry is poor among some youth, parents, and educators. Due to this negative stigma, young people who seek jobs or develop skills that are used in transportation jobs often discredit the transportation industry as a career option. Transportation jobs are often thought to be jobs that involve getting dirty (can be an asset for environmental professionals who prefer jobs that get them out into the field/nature) and have low wages and little chance for advancement, without recognizing the potential long-term career opportunities. Transportation organizations need to continue to unify efforts around re-branding the industry and educating young people regarding their opportunities.

Employee Age, Generational Gap. Organizations mentioned two compounding trends where a large population of older workers is retiring from skilled positions in the next 5 years and less younger workers are joining the transportation workforce. Even if the number of young people joining the workforce does increase, transportation organizations may not have enough time to develop the skills necessary to fill vacant positions if retirements and turnover accelerate again. Participants reported that the greatest workforce challenge is marketing careers in the transportation industry to young people and recruiting them into skilled and unskilled positions, though such difficulties have eased with high unemployment across the country. Contractors are challenged with finding ways to demonstrate that transportation jobs are rewarding, long-term careers. The current workforce is skewed toward the upper age brackets given a large influx 20-40 years ago, leading to conditions over the last decade and a half where employees have been retiring at a faster rate than young people are entering the industry.

Misperceptions of the Job. Transportation participants indicated that their organizations struggle with negative perceptions associated with the transportation industry. A large percentage of potential applicants do not understand the range of positions and opportunities available in transportation. For example, one participant noted that the majority of students attending a high school career fair indicated on a survey that an engineer was (only) the person who drove a train. Another participant described a college engineering professor who deterred his students from taking jobs at the DOT because it would be a "waste of their talent." The problem is more acute for maintenance engineers, and maintenance staff comprise the bulk of remaining DOT staff now. Organizations are challenged with convincing potential applicants that they can establish a full career, not just a temporary job, in transportation.

Misperceptions of the Gender/Cultural Barriers. Participants indicated that females may not be choosing transportation jobs because they perceive them as having gender barriers that inhibit successful career advancement. In addition, female candidates may feel that they will be discriminated against on the job because the industry is dominated by males. The National Association of Women in Construction reports that only 10 percent of the construction workforce is female. Participants in a study for the Florida DOT indicated that this statistic represents their experience (Cronin et al., 2007). Participants in the same study indicated that the greatest influence on a female applicant's decision to accept an unskilled transportation job is frequently the physical demands of the job. The next greatest influence reported was related to the cultural and background influences (e.g., family and friends) on prospective female applicants and the applicant's belief that people similar to her are not employed in the field (Cronin et al., 2007). This "similarity factor" supports the contention that female applicants perceive the field as being male-dominated. In addition to gender, close to one-half of the participants in the study indicated that cultural and/or background influences, such as influential family and friends, are challenges with recruiting applicants from other non-traditional populations (Cronin et al., 2007).

7.2   Industry Strategies. Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Branding the Organization/Industry" (see Exhibit 7-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 7-2	
Industry Strategies: Branding the Organization/Industry	
Strategy	*Strategy Description*
Advertise the Strengths of the Organization	In terms of benefits, organizations emphasize retirement benefits, full-year work contracts, extended vacation time, on-the-job and technological training, scholarships, reimbursement programs for continuing education, health insurance, life insurance, flexible schedules, and telework programs. To promote the potential for advancements, organizations develop career track information that features the average timeline for promotions and describes the positions available at each consecutive level of the organization. Candidates who are not initially attracted to unskilled positions may reconsider the opportunity if they know that their time at entry-level will be short and that positions with more responsibility are only a short time away. When it comes to recruiting younger generations, organizations are focusing on the social aspects of the job and if possible the work flexibility and growth opportunity. In advertisements and interviews, organizations are highlighting the team-based work environment, social events, sports teams, and online networking groups.
Get Involved in the Community and Advertise It	Participants suggested their organizations perform community service work as a means of advertising their name and marketing their civic commitment and thereby increasing the number of applicants who choose to apply. Many states have "Adopt a Highway" programs where organizations can participate and place a sign on the highway that says "Cleaned by Organization X." Other organizations provide their employees with company t-shirts to wear while completing the community service. These efforts to increase community involvement have been found to be effective in recruiting applicants from

Exhibit 7-2 (Continued) Industry Strategies: Branding the Organization/Industry	
Strategy	*Strategy Description*
	Generation Y who are more attracted to organizations involved in the community. After decades of corporate scandals, applicants are concerned about the altruism and ethics of their employer in addition to the compensation. "Working at a company that has high values" was a top 5 value enunciated by organizational leaders in a 2008 study on talent management and retention (Galinsky, Carter, and Bond, 2008). Some participants reward employees who volunteer for road cleanings on their own time and/or who help stranded motorists while on the job. Sponsoring popular activities (such as county fairs), making charitable contributions, establishing green policies, and raising the bar on business ethics are other ways to be present and noticed in a community. One example of a program that several organizations have joined is "Engineers without Borders."
Use Real Employees in Advertisements	Organizations have found that using real employees in their advertisements, especially women and minorities, has been very effective in recruiting applicants. Real workers appear more credible, even if they are less polished, and are more readily prepared to describe their daily experiences. Also, applicants may be better able to identify with actual entry-level workers than seasoned HR professionals. To capitalize on this idea, organizations have rewarded high performers with the opportunity to speak at career days and other recruiting events. These high performers can share anecdotes, statistics, and quotes about their organization and other successful employees that started in entry-level positions. This shows potential candidates that there is opportunity for advancement within the organization. Some organizations utilize female workers when recruiting female applicants. Other organizations work with associations like the National Association of Women in Construction to provide support in the area of recruiting females. One strategy these groups are using is to show that many females already have experience working in physically demanding jobs including hospital work, restaurant work, and child-care, which could qualify them for other labor-intensive careers.
Make the Jobs Appealing	Employees perpetuate community and prospective applicant ideas about the company by telling others about their own experiences. Thus, if employees are pleased with where they work, those employees help to create a positive reputation for the agency.
Improve Image as "Diversity Friendly"	The transportation industry has traditionally been thought of as a seniority-based industry that inadvertently discriminates against minority groups and females who have been in the workplace for fewer years.
Use a Comprehensive Marketing Campaign	Many associations and agencies recognize that recruitment challenges stem from education and the lack of information available to students and the general public about transportation jobs. Thus, some organizations have launched comprehensive marketing campaigns to improve the image of transportation. Rewards and recognition are also a large part of these campaigns.

Exhibit 7-2 (Continued) Industry Strategies: Branding the Organization/Industry	
Strategy	*Strategy Description*
Capitalize on Social Networking Technology	Organizations are creating accounts on Facebook, MySpace, YouTube, and Twitter and uploading short videos to highlight the positive aspects of a career in transportation. These are websites where originally individuals, and now organizations, design web pages to present their background and interests. These websites allow individuals to electronically connect with the websites of other individuals so that the information, pictures, and videos that are uploaded on one website appear on all the connected websites. Organizations will upload information about job opportunities, pictures of employees working and having fun, and videos of realistic job previews. WSDOT has found that joining these social networking sites allows the organization to reach more applicants while branding themselves as an "up-to-date" and "technologically savvy" employer. Another non-web-based way to network is to pass out mini-discs with video advertisements of the organization. The size of the mini-disc makes them easy to pass out and share. Additionally, the videos direct passive job seekers to websites where they can get more information.
Communicate a Message and Target an Audience	Organizations develop a logo and tagline with the objective of branding transportation as a desirable career. Marketing research suggests that branding can highlight the successful characteristics of a job and improve recruiting success. The following messages have been found to be effective: (1) *transportation workers receive good pay and benefits*, (2) *you can "fit in" as a transportation worker*, (3) *you can start earning money right away without training or education*, (4) *the industry has many attractive career opportunities*, (5) *by working in transportation, you are giving back to the community*, (6) *the success of the community depends on effective transportation work*, (7) *transportation is a viable career for female workers*, (8) *the transportation industry promotes and supports on-the-job training and education*, (9) *transportation jobs have excellent advancement potential*, (10) *transportation is a great place for your son or daughter to start a career*, and (11) *employees have access to cutting-edge technology*. Logos and taglines can be inscribed on inexpensive promotional items such as key chains and toy footballs that can be used as handouts at career fairs and career days. While handing out these items, representatives can talk to passive job seekers about the organization.

7.3   **Workforce Practices.** Ten workforce practices that were designed to assist in making the process of "Branding the Organization/Industry" efficient and effective were reviewed, and we identified two workforce practices that were noteworthy within this context:

- Iowa State University's Institute for Transportation (InTrans) Go! Magazine
- Washington State DOT Branding through Social Media

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

Iowa State University's Institute for Transportation (InTrans) Go! Magazine. The Institute for Transportation (InTrans) at Iowa State University is a large research center with more than 40 full-time faculty and professional staff and between 80 to 100 graduate student research assistants. However, three members of the InTrans publications group— two graduate student writers and a part-time editor— are dedicated solely to *Go!* magazine. *Go!* shares a managing editor and two graphic designers with the Institute of Transportation (InTrans) at Iowa State University.

> ***Iowa State University's Institute for Transportation (InTrans) Go! Magazine***
> - **Job Type:** All
> - **ROI:** Short- to Mid-term
> - **Generation:** Younger
> - **Key Program Highlights:**
>   - Informs teens about the transportation industry and possible career paths
>   - Prints in English and Spanish
>   - Targets young adults ages 14 to 20
>   - Funded through grants and sponsorships (Platinum, Gold, and Bronze)

Iowa State University's Institute for Transportation (InTrans) publishes the *Go!* Online magazine. The goal of *Go!* Online magazine is to inform teens about the transportation industry and possible transportation career paths. The magazine explores the world of transportation including highway and bridge development, transit vehicles, and types of drivers. The free e-magazine is targeted to teens and young adults ages 14 to 20. As an indication of the success of the magazine, 33% of their readers stated that they were planning to pursue a career in transportation and 66% of those respondents said the magazine had influenced that decision positively. *Go!* is funded through grants and donations from sponsors who share a common interest in helping recruit young people to study and pursue careers in transportation. They have three levels of sponsorship: Platinum ($7,500 and up), Gold ($3,000–$6,000), and Bronze ($500–$999). This year's (2009–2010) sponsors include the Federal Highway Administration, Iowa Math and Science Education Partnership, and Midwest Transportation Consortium at Iowa State University, which are all Platinum-level sponsors. *Go!* has begun using social media as well to attract bigger audiences. The magazine maintains a Facebook page (http://www.facebook.com/pages/Go-Exploring-the-World-of-Transportation-a-magazine-for-teens/36512518095?v=wall), videos on YouTube, and a Twitter account. In addition, beginning with the September 2009 issue, the magazine is being translated into Spanish.

Washington State DOT Branding through Social Media. The Washington State Department of Transportation (WSDOT) has approximately 7,500 employees. WSDOT's Human Resource (HR) division has begun using social media outlets as part of their recruitment strategy. In 2007, WSDOT's Communications Department began identifying ways to re-brand the agency and get information about WSDOT to technology-savvy and younger (under 30) populations. Thus, the agency began using YouTube and Facebook to post agency information. The goal for WSDOT is that when the agency begins to recruit again, the general population will be much more aware of the agency. WSDOT has also tested other social networking outlets such as Google Groups, GovLoop, LinkedIn, and MySpace. For WSDOT's Facebook page, the agency has provided information about the transportation industry and a typical career at WSDOT. WSDOT has also included a Spotlight Employee piece, which highlights a person and his/her role within WSDOT on the agency's Facebook group page.

> ### *Washington State DOT Branding through Social Media*
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** Younger
> - **Key Program Highlights:**
>   - Social media tools include Webpage, YouTube, Facebook, Google Groups, GovLoop, LinkedIn, MySpace, Blogs, Twitter, Flickr, RSS, and FriendFeed
>   - Spotlight Employee to highlight employee and role within the agency, along with promotional videos on key position classes and sample employees
>   - Helps build trust, educate the public, and develop long-term relationships with users

Furthermore, WSDOT has developed a variety of videos on key position classes and sample employees, which are now incorporated as hyperlinks on the agency's employment website. For example, WSDOT was having difficulty finding qualified maintenance people in their Northwest region so the agency created videos of actual maintenance employees and had the employees describe what they do on the job and why they perform that job. The agency first put the maintenance worker video on YouTube and then posted it on the employment website as well. WSDOT has different lines of work such as Maintenance, Engineering, Clerical, and Planning. To allow viewers of the video to find out more about business at WSDOT, six hyperlinks on the WSDOT website under "Stay Connected" send users to different social media outlets (Blogger, Twitter, Flickr, YouTube, RSS, and FriendFeed). Visitors can learn more about recent and upcoming activity and projects at WSDOT. The hyperlink to YouTube connects to WSDOT's Channel, which has videos that were uploaded within the past 2 years about specific jobs or careers at WSDOT.

WSDOT's HR division has chosen social networking in order to build trust, educate the public about the transportation industry, and begin developing long-term relationships with users of social media. WSDOT has chosen to use social networking based on what the agency has observed other public and private sector organizations are using in recruiting. While no specific outcome measures have been collected at this time, WSDOT judges the success of the social networks through the increased inquiries they have received from other state government agencies.
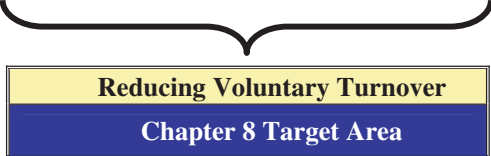
Other Example Practices

To serve as an additional resource for agencies interested in "Branding the Organization/Industry," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- American Road & Transportation Builders Association-Transportation Development Foundation (ARTBA-TDF) Awards Programs
- Employee Branding
- Employer of Choice Toolkit
- Engineer Your Life

- It's Our Future Campaign
- Illinois Road Transportation Builders Association Community Presentations
- Promotional Videotapes
- Women's Transportation Seminar

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 8: Reducing Voluntary Turnover

Voluntary turnover is often the result of a lack of recognition by the agency of their employees' value to the organization, policies that inhibit growth, and lack of opportunities for advancement. In this chapter, we present challenges, strategies, and workforce practices related to "Reducing Voluntary Turnover." Exhibit 8-1 provides a snapshot of the chapter.

Exhibit 8-1 Snapshot of Chapter 8	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..………...…..**61** ▪ **Short-term Turnover** ▪ **Differences in Job Expectations** ▪ **Better Location** ▪ **Deficiency in Top Management Support** **Industry Strategies**…………………**61** ▪ **Remove Obstacles to Employee Growth** ▪ **Reward Citizenship Behaviors** ▪ **Keep Former Employees Close** ▪ **Reward Employees** ▪ **Take Care of Employees** ▪ **Focus on Retention Early and Learn from Mistakes** **Workforce Practices**…..……………**63** ▪ **Regional Transportation District (RTD) Champions of Transit Program** ▪ **Missouri DOT Employee Solutions at Work (SAW) Program**	 Many transportation agencies are realizing that reducing voluntary turnover is a cost-effective approach to retaining a strong workforce, particularly in challenging economic times. **Definition of Reducing Voluntary Turnover:** Involves efforts to monitor and increase employee job satisfaction as well as organizational commitment.

Workforce Pipeline Target Area

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Reducing Voluntary Turnover

Chapter 8 Target Area

8.1   **Workforce Challenges.** Programs related to "Reducing Voluntary Turnover" are typically designed to address challenges associated with maintaining a satisfied workforce. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Short-term Turnover. Participants indicated that between 6 and 18 months after beginning a new job, some employees realize that they do not enjoy their new work environment and voluntarily opt to leave the company. The primary reasons for this type of turnover include an inability to find the work meaningful; an inability to fit into the organizational culture; a conflict or dislike of a supervisor; a lack of flexibility, autonomy, or leadership opportunities; and/or the necessity of outdoor manual labor. During this critical timeframe, organizations struggle to keep these employees onboard; thus, specific workforce initiatives need to be targeted at employees within this timeframe.

Differences in Job Expectations. Organizations have found that generations differ in terms of what they want from their employer; employees aged 50 and over often prioritize being respected and feeling valued, employees in their 40s often want more time at home and greater work-life balance, and employees in their 30s typically desire different types of development opportunities. With regard to development opportunities, employees from younger generations are interested in learning as much as they can in a short period of time. These younger employees are often interested in expanding their skill set in order to make themselves more desirable in the job market. Organizations are challenged with providing the necessary amount of training to keep employees engaged while balancing the amount of time employees spend in training with their contributions to the bottom line. Organizations are also challenged with training supervisors in how to harness their employees' desire to learn.

Additionally, younger workers often differ in their expectations when it comes to promotions. Today's younger workers are looking to quickly climb the corporate ladder and if promotions do not occur in 2 to 3 years, these workers may begin to look for opportunities outside the organization. This differs from previous generations who were not as concerned with promotions as they were with job stability. In addition to dealing with these differences in expectations, employers also have to work with managers who do not believe in treating all employees according to their needs.

Better Location. Large private sector competitors (e.g., Boeing, Google, John Deere, Wal-Mart) often build facilities in rural and remote areas, which decrease the amount of potential applicants for job openings in the smaller, more resource-constrained public sector agencies in those same areas. These big companies will hire the majority of the individuals in the local towns and sometimes 'grow' towns based on their employment demand. Public sector organizations struggle to retain employees when one of these large facilities is constructed, especially if more generous compensation and benefits or greater opportunities to work with people they know are offered.

Deficiency in Top Management Support. Participants suggested that their organizations are challenged with gaining corporate support for new retention initiatives. Human resource (HR) representatives reported that they sometimes struggle to convince higher-level leadership that investing in initiatives found to reduce turnover can also contribute positively to the bottom line.

8.2   **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Reducing Voluntary Turnover" (see Exhibit 8-2). While these strategies represent the general direction of HR departments across the nation, it is

important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 8-2 Industry Strategies: Reducing Voluntary Turnover	
Strategy	*Strategy Description*
Remove Obstacles to Employee Growth	Research indicates that removing barriers and workplace distractions are essential components of employee retention. For example, many transit organizations single out improved training itself as key to workforce recruitment and—especially—retention (TRB, 2003).
Reward Citizenship Behaviors	Employees are interested in working for companies that encourage meaningful relationships with the community and value employee camaraderie. Thus, it is important that organizations recognize individuals who contribute to the organization, to their coworkers, and to the surrounding community through participating in charitable acts, commonly referred to as organizational citizenship behaviors (i.e., contextual performance). An increasing number of DOTs are promoting environmental stewardship activities in particular. NYSDOT has been particularly effective at increasing staff pride and ownership with such activities, in the context of regular maintenance work and additional partnership activities sometimes outside of work hours.
Keep Former Employees Close	During times of economic downturn, organizations are providing training courses to laid-off employees on how to search, apply, and interview when seeking a job, as well as career counseling, outplacement assistance, resume - writing, access to office equipment, financial counseling, access to job fair information and information on internet job placement sites. This conveys to the employee that the organization is concerned about their career beyond their contribution to the bottom line. Organizations that provide such training and then experience lay-offs have seen many of those who were laid-off reapply when openings became available. This assistance will also keep employees local, which may help the organization more quickly rehire them in the future. Organizations are also developing websites where former employees can go to receive updates on the organization's recent accomplishments, the current employees, and even job opportunities. Developing an "alumni portal" conveys to current and former employees that the organization is interested in their well-being even after they have moved on to another organization. Organizations with alumni portals have also seen former employees return based on the constant contact. Rehiring former employees is beneficial to the organization because those rehires do not require as much training. During times of economic downturn, organizations are even reaching out to their competitors when they can no longer support their employees. They are pointing their employees in the direction of these job opportunities to ensure that the individuals stay employed. Organizations that practice this tactic typically see their employees return when new job opportunities become available.

Exhibit 8-2 (Continued) Industry Strategies: Reducing Voluntary Turnover	
Strategy	*Strategy Description*
Reward Employees	To directly combat turnover issues, some organizations are implementing programs where cash bonuses are provided to employees who have accomplished 5, 10, or 15 years of service. More typically, organizations are providing employees with cash bonuses for either performance that goes above and beyond their current job description or for having the lowest number of safety incidents during a designated period of time (e.g., 1 year). It is important to connect workers to their accomplishments and, depending on the person's personality, recognize them publicly. Organizations post pictures of award winners where they can be seen by other employees. It must be noted that public recognition may not be as motivating for employees who are more introverted and those employees may prefer more silent forms of recognition (e.g., individual email from supervisor).
Take Care of Employees	One way to retain employees is to find out what their work- or non-work-related needs are and determine if the organization can do anything to provide assistance to the employee in balancing their work and personal life demands, to free them up more for work. For example, organizations have found that providing resource and referral services that locate available childcare, provide legal counseling, and identify eldercare resources allows individuals to address personal needs that might otherwise distract from work performance. Furthermore, organizations have found success when they have provided legalization and immigration counseling to employees who may otherwise contribute to attrition if forced to leave the country to avoid deportation.
Focus on Retention Early and Learn From Mistakes	Research has found a curvilinear relationship between company tenure and turnover such that turnover rates are high during employees' first year, higher in years two and three, and then steadily decrease the longer an employee stays at an organization (Hom, Roberson, and Ellis, 2008). Thus, organizations must focus on retaining employees during their first 3 years of service.

8.3 **Workforce Practices.** Eight workforce practices that were designed to assist in making the process of "Reducing Voluntary Turnover" within transportation agencies efficient and effective were reviewed, and we identified two workforce practices that were noteworthy within this context:

- Regional Transportation District (RTD) Champions of Transit Program
- Missouri DOT Employee Solutions at Work (SAW) Program

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

Regional Transportation District (RTD) Champions of Transit Program. The Denver metro area's Regional Transportation District (RTD) has approximately 2,600 employees in its workforce with average age of 48 years. RTD struggled with recruitment and retention efforts for several years, an ongoing challenge of retaining employees working split shifts, nights, and in jobs that can be stressful and physically demanding. When RTD was losing an average of 20 employees per month, they decided to implement a program that demonstrates the agency's appreciation for employee involvement in community, organizational, and personal development activities.

Champions of Transit integrated community involvement, employee wellness, and employee recognition activities into one program. The program's mission is to provide excellent service and support in the areas of wellness and rehabilitation. By implementing the Champions of Transit program, RTD anticipated its employees would become more aware of their health and as a result would remain on the job longer by avoiding injuries and disability leave and learning how to manage the stress of the job. The Champions of Transit program communicates RTD's commitment to being a positive force in the community and to employee health, well-being, and development. The agency describes the program in a colorful glossy catalog, *Get Involved,*

> ### *Regional Transportation District (RTD) Champions of Transit Program*
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - Integrated community involvement, employee wellness, and employee recognition activities
>   - On-site physical therapist has saved "millions of dollars"
>   - Positively impacted agency operations and helped improve performance

Get Healthy, Get Rewards, Get Recognized. This catalog describes the benefits of participation for the employee and the community, steps to get involved, and the rewards for each type or level of involvement.

To implement the practice, point values are assigned to each of three types of Champions of Transit activities: Community Outreach, Personal Development, and Hooked on Health. The Community Outreach Program includes RTD promotion booths at fairs and festivals, internal RTD employee events, and community races. The Personal Development component includes wellness center participation and a resource center. The Hooked on Health component is the Employee Wellness Program, which promotes fitness and self-improvement.

The initial cost of equipping each district with the appropriate machines and resources for the program was around $200,000. In addition, RTD spends approximately $150,000 in staff salaries and another $40,000 to operate the Champions of Transit program each year. The program also funds an on-site physical therapist, which alone has saved RTD "millions of dollars" in absenteeism, disability leave, and workers' compensation costs. Staff can attend physical therapy daily and must be certified before they return to work, to ensure they are well. RTD monitors health data on prescription costs too, to better understand its employees' health needs. Strengths and weakness of the program are evaluated with feedback obtained from various surveys, including the year-end survey and exit surveys. RTD's Champions of Transit program has impacted agency operations and helped improve performance levels, generating the highest rates of return through its ability to help participants return quickly to work following an injury and reduce absenteeism.

Missouri DOT Employee Solutions at Work (SAW) Program. The Missouri Department of Transportation (MoDOT) employs 6,289 people with an average age of 42 years. MoDOT wanted to foster a culture that supports employees' input and ideas, but struggled with transforming this idea and desire into practice. Additionally, MoDOT employees were unsatisfied with static salaries, and the agency wanted to find a way to recognize employees for performing above expectations. Thus, in 2006 MoDOT established their Solutions at Work (SAW) program, which recognized employees for implementing performance practices that improve daily operations.

SAW allows the agency to collect, evaluate, document, and communicate best practices that are delivering improved results. Each division encourages its employees to identify and implement improved processes or new pieces of equipment that would make operations more effective, more efficient, or safer. Once a best practice has been implemented in a division and has shown improved results, the responsible employee(s) can submit it to the SAW program for review. The review process entails multiple steps, including: (1) an idea advocate who ensures submissions qualify and are complete, (2) the division manager who confirms improved performance or results, (3) technical reviewers who ensure the best practice will have a positive impact on the agency's resources (e.g., time or money) and on organizational performance, and (4) an employee advisory counsel member who serves as an objective last check of feasibility and fairness in the previous reviews. Best practices that pass the review process are implemented throughout MoDOT and the responsible employee is awarded up to 2 days of leave or $300.

> *Missouri DOT Employee Solutions at Work (SAW) Program*
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   o Collects, evaluates, documents, and communicates best practices that deliver improved results
>   o Employees responsible for submitting best practices that get implemented are awarded 2 days leave or $300
>   o 70% and 80% of best practices implemented positively impact field operations and maintenance performance

The majority of costs related to the SAW program were incurred during design and implementation. The implementation of SAW required approximately 25 percent of one full-time employee for 7 months, the assistance from an IT programmer to develop the interface for the database, and the support of several staff within the agency to create the Intranet page. Since implementation, the only costs for maintaining the program involve the time it takes to review each practice, which has continued to decrease with experience. Additionally, many best practices that have been implemented throughout MoDOT have saved the organization millions of dollars.

MoDOT tracks organizational performance as a result of best practices implemented from the SAW program, and they have observed SAW's ability to continually provide significant improvement and success. For example, MoDOT estimates that between 70% and 80% of the best practices implemented positively impact field operations and maintenance performance. Furthermore, these best practices improve the agency's efficiency and effectiveness by allowing employees to do their work better, faster, and safer in the field. The program also conveys that the agency cares about its employees and ideas, is listening, and will act on them. The program helps the agency foster and reaffirm a culture of innovation and accountability and successfully engages employees.

Other Example Practices

To serve as an additional resource for agencies interested in "Reducing Voluntary Turnover," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.
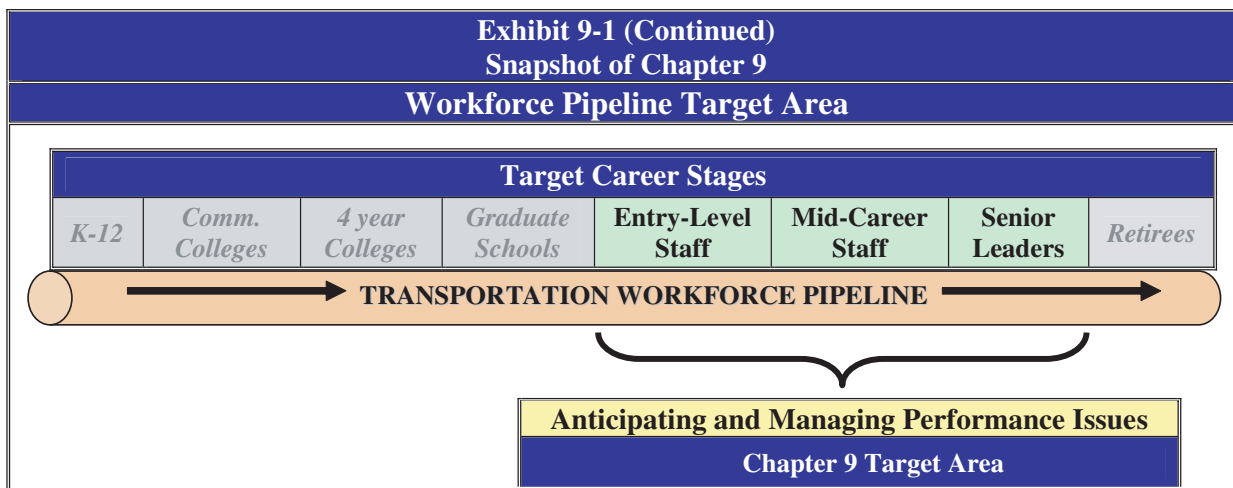
- Arizona DOT Exit Survey Program
- Employee Engagement, "Your Voice"
- Employer Recognition Program
- Idaho Department of Transportation's (IDT's) Non-Managerial Career Ladder Program
- Realistic Job Preview
- Recruitment and Attrition Lifecycle

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 9: Anticipating and Managing Performance Issues

To minimize the need for future downsizing, organizations need to be deliberate on (1) the strategies they use to determine the need for new talent, (2) the design of their organizational practices such as clarifying performance expectations through specific criteria and the conduct of regular performance appraisals, and (3) attending to employee job and organization "fit" during the recruitment process. In this chapter, we present challenges, strategies, and workforce practices related to "Anticipating and Managing Performance Issues." The majority of workforce challenges that result from performance issues are primarily retention related (i.e., issues concerning employees already on the job who are having performance issues that may voluntarily or involuntary terminate their employment). This chapter describes a couple of strategies that organizations can implement to minimize this inevitable challenge. However, the bulk of the strategies described here are preventative measures that organizations can employ during the recruitment process. Exhibit 9-1 provides a snapshot of the chapter.

Exhibit 9-1 Snapshot of Chapter 9	
Chapter Road Map	**Concept and Definition**
Workforce Challenges….…….........68 ▪ **Poor Employee Performance** **Industry Strategies**…………………68 ▪ **Provide Meaningful Performance Feedback** ▪ **Evaluate Organization and Job Fit in the Recruitment Process** ▪ **Implement Workforce Planning and Hire the Best People** ▪ **Utilize Realistic Job Previews (RJPs)** ▪ **Mentor and Coach Employees** **Workforce Practices**…..……………70 ▪ **Minnesota DOT Individual Competencies for All Positions** ▪ **Virginia DOT Downsizing Substitution Program**	 Anticipating and managing performance issues helps organizations reduce unwanted reassignments, poor performance, and involuntary turnover.
	Definition of Anticipating and Managing Performance Issues: Involves avoiding adverse decisions (e.g., reassignments, layoffs, terminations) that could have been prevented with the proper forethought and better differentiating between good and bad performers during the selection/promotion process.

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Exhibit 9-1 (Continued)
Snapshot of Chapter 9
Workforce Pipeline Target Area

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Anticipating and Managing Performance Issues

Chapter 9 Target Area

9.1   Workforce Challenges. Programs related to "Anticipating and Managing Performance Issues" are typically designed to address challenges associated with managing an organization's current workforce. For example, one common challenge an agency might face is:

Poor Employee Performance. Organizations constantly struggle to identify best practices to deal with under-performing employees. Poor employee behavior and unsatisfactory performance are major workforce challenges that limit an organization's potential to achieve its goals. Participants indicated that it is significantly easier to avoid unsatisfactory employee behavior and performance by reducing the number of poor hires and better managing applicants' expectations of the job and its related duties.

9.2   Industry Strategies. Researchers and program managers identified the following programmatic strategies when describing industry efforts in "Anticipating and Managing Performance Issues" (see Exhibit 9-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 9-2	
Industry Strategies: Anticipating and Managing Performance Issues	
Strategy	*Strategy Description*
Provide Meaningful Performance Feedback	Administrative and developmental performance reviews are an important component of employee retention because they help the employee respond to expectations of the organization and effectively determine his/her standing in the organization in terms of performance, development, and promotion. Performance feedback also helps to ensure that employees are not terminated due to poor performance and therefore reduces involuntary turnover.
Evaluate Organization and Job Fit in the Recruitment Process	Recruitment strategies that consider a person's personality fit with the organization are linked to reduced turnover and fewer performance issues (Johnson et al., 2008).

Exhibit 9-2 (Continued) Industry Strategies: Anticipating and Managing Performance Issues	
Strategy	*Strategy Description*
Implement Workforce Planning and Hire the Best People	While organizations are having senior-level leadership determine the direction of the organization and future initiatives, they are also having those leaders determine the skills that will be needed to accomplish future initiatives. When plans for the future are shared throughout the organization, supervisors can begin to prepare and train their employees to be ready when new initiatives are implemented. Knowledge of leadership's strategic plans also allows hiring managers to locate and hire the right candidates to support these initiatives. This knowledge during the hiring process helps to avoid unnecessary layoffs due to uninformed staffing decisions.
Utilize Realistic Job Previews (RJPs)	When it is time to start hiring, organizations have found that involving incumbents in the selection process results in decreased turnover because they can provide candidates with previews of actual job experiences and use their experience to contribute to the assessment of the candidate's qualifications. It is also positive for the organization if an applicant who would soon come to dislike the working conditions is deterred by the realistic job preview. For example, front-line workers in the oil industry who do not want to be managers are at times promoted into recruiting positions to share their knowledge of the job.
Mentor and Coach Employees	Organizations indicated that developing a career path and certification program for transportation workers has been successful in retaining their workforce. The intent is to provide a series of goals for career progression and promote lifelong careers. To support these career path initiatives, organizations are having mentors meet one-on-one more than annually with assigned employees to determine the next step in each employee's career, what obstacles stand in the way of reaching that step, and what the mentor can do to remove those obstacles. Organizations are also adding pages to their intranet sites that provide information on the steps that employees of different levels must accomplish to reach the next consecutive level. This transparency is intended to help convey to employees that there are opportunities for advancement within the organization. For "harder-to-retain groups" such as women and minorities, organizations have developed specific mentoring programs where junior employees are paired up with senior employees from the same minority group to periodically discuss their career path and goals. Mentors share their experiences and help mentees find ways to overcome obstacles to their success. During workshops, mentors and mentees solve work-related activities and are involved in large group discussions with other mentors-mentees teams.

9.3   **Workforce Practices.** Four workforce practices that were designed to assist in making the process of "Anticipating and Managing Performance Issues" within transportation agencies efficient and effective were reviewed, and we identified two workforce practices that were the most noteworthy within this context:

- Minnesota DOT Individual Competencies for All Positions
- Virginia DOT Downsizing Substitution Program

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

Minnesota DOT Individual Competencies for All Positions. Minnesota Department of Transportation (Mn/DOT) employs 5,033 people in a variety of employment conditions (i.e., temporary, unlimited, full-time, part-time). Mn/DOT has identified and defined seven individual competencies that describe how successful employees perform on the job and help employees understand the actions or behaviors that are desired. The seven competencies include Leadership, Learning and Strategic Systems Thinking, Quality Management, Organizational Knowledge, People Management, Technical Knowledge, and Individual Characteristics. Mn/DOT utilized a card-sorting process to narrow an initial list of 67 competencies down to 10 that are most important to the agency and relevant to an employee's success.

> ### Minnesota DOT Individual Competencies for All Positions
> - **Job Type:** All
> - **ROI:** Short- to Mid-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - Describes performance standards and helps employees understand desired behaviors and actions
>   - Ensures a level of consistency across the organization
>   - Helps hiring managers quickly identify and evaluate more qualified applicants

The implementation of these competencies required minimal costs and produced great benefits for the agency. Aside from the cost of hiring a consultant initially, the implementation of the seven competencies has only required HR personnel time and effort to successfully incorporate them into all HR functions and tools including position descriptions, performance appraisals, career planning, succession planning, recruitment, and selection. Mn/DOT's leadership has explained that the individual competencies provide greater accountability for employees and their performance because the competencies serve as a reference point for employees to help them understand what is expected in the job. From the staffing perspective, rolling the competencies into position descriptions and minimum qualifications has ensured a level of consistency across the organization in how the competencies are utilized. While the competencies have helped make Mn/DOT more unified, the competencies have also made it easier for hiring managers to identify and evaluate more qualified applicants.

The approach was designed to serve as a foundation for Mn/DOT's Succession Planning effort in the early 1990s. The intent was to align the competencies, positive behavior, and values with the organization's vision and goals. Mn/DOT has found the program to be successful in unifying the agency, establishing expectations, and giving managers tools to use in performance management and during initial probation periods after hires. The state's bargaining units were involved throughout development of the program. In 2009, Mn/DOT went through the process of refreshing and updating the competencies for the next decade.

Virginia DOT Downsizing Substitution Program. The Virginia Department of Transportation (VDOT) has a workforce of roughly 7,600 full-time employees with an average age of 48 years. VDOT's substitution practice falls under the Commonwealth's layoff policy. As of 2008, VDOT employed roughly 8,400 full-time, classified employees, but mandates require the agency to be at 7,500 staff by July 1, 2010. The state of Virginia has a Department of Human Resource Management responsible for overseeing all HR departments for the entire Commonwealth and for providing policy oversight regarding layoff mandates. Within the state's downsizing policy, there is a "substitution rule." Most agencies in Virginia have not utilized the substitution rule and instead implement strict layoffs. VDOT wanted to invoke the substitution rule to help provide staff with a choice in the layoff process. VDOT requested and was permitted to exercise full flexibilities in the implementation of the substitution rule during the mandated reduction of staff. Full flexibilities allow VDOT to identify substitutes based on minimum qualifications as opposed to being restricted to make placements within the same role (e.g., engineer has to be substituted for engineer).

> ***Virginia DOT Downsizing Substitution Program***
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - Allows retirement-eligible employees the opportunity to serve as substitutes for employees whose positions were eliminated as a result of layoffs
>   - Reduces the risk of losing majority of retirement-eligible employees at once
>   - Of 370 employees who would have been laid-off, 333 were retained through the program

The substitution program was used to help temper morale and ease the process of terminating staff based on the mandate. Retirement-eligible employees may serve as substitutes for employees whose positions were eliminated. To coordinate the substitution program, the agency developed and maintains a database where retirement-eligible employees can apply to be substitutes for junior employees who were given initial notice of layoff. If an employee was planning on leaving the agency, this layoff process allows him/her to leave sooner with an enhanced severance package if their position was directly eliminated or if they were able to serve as a substitute for another employee. If VDOT did not apply the substitution rule, they would have to lay off many of their junior staff and then face the risk of a large population of more senior employees retiring soon after, leaving the agency with a future cost and recruitment burden.

This system allows those whose jobs are in jeopardy to be placed into the jobs of the substitutes. Those individuals whose jobs are in jeopardy and want to stay are then matched according to minimum qualifications with those ready to be substitutes. The cost of implementing the substitution program has included a part-time programmer who spent 50% of his time for 3 to 4 months to develop the application that is used to track applications to substitutes and for placements. Additional cost included the HR placement team that spent 5 full-time weeks pairing junior-level employees who would have been laid off with senior-level employees who offered to substitute. The cost of offering early severance packages was substantial, yet it was predicted to be offset by the savings of avoiding costs that would have otherwise been associated with future hiring and training.

The substitution program has been much more successful with VDOT's rounds of layoffs than the agency originally anticipated. The agency provided an initial notice of layoff to 640 employees in July 2009. VDOT had approximately 270 employees who elected not to seek placement leaving roughly 370 employees who wanted placement for only 109 vacancies that could be immediately filled. However, the agency was able to successfully place 333 employees because 224 of the remaining 260 employees seeking placement were able to be placed into a position using an employee substitute. The agency had a number of employees, approximately 25, who identified opportunities outside the agency and were

voluntary quits. As a result, VDOT was only unable to place approximately 12 employees who sought placement and were laid off, a great morale saver.
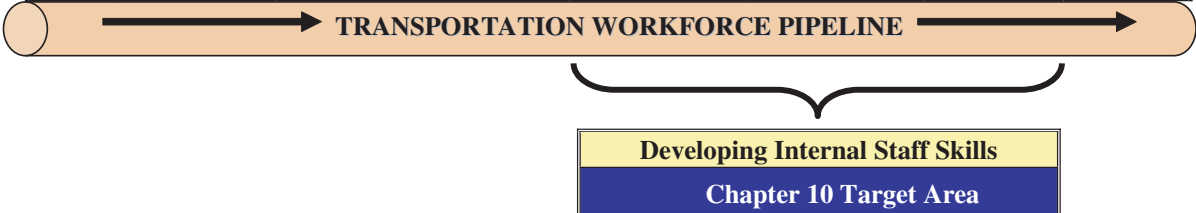
Other Example Practices

To serve as an additional resource for agencies interested in "Anticipating and Managing Performance Issues," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Personality-Fit Recruitment Strategies
- Using Mentors to Socialize New Recruits

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 10: Developing Internal Staff Skills

To effectively address future skill needs, agencies must conduct thorough gap analyses and identify training content and methods to help address those gaps. Developing internal staff skills reduces turnover in a variety of ways. Employees are more likely to remain with the organization when they possess the skills required by job tasks. In this chapter, we present challenges, strategies, and workforce practices related to "Developing Internal Staff Skills." Exhibit 10-1 provides a snapshot of the chapter.

Exhibit 10-1 Snapshot of Chapter 10	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..……..........**75** **Speed of Technology** **Changes in Policy and Technology** **The Cost of Training** **Difficulty Providing Sufficient Quality Training** **Failure to Apply Training** **Failure to Update Training** **Industry Strategies**…………………**76** **Use Job Rotation** **Offer Offsite and Higher Education Training Opportunities** **Offer Certification-Type Programs** **Tailor Training Opportunities to Build Competency** **Use Technology to Support Training** **Workforce Practices**…..……………**78** **North Carolina DOT Transportation Supervisor Conference**	Providing opportunities for employee development demonstrates that the organization cares for the welfare of employees, which helps foster employee commitment. **Definition of Developing Internal Staff Skills:** Involves identifying training and development content and methods to help address skill gaps in the workforce. The goal of these efforts is to help organizations provide opportunities for employees to develop professionally. As a result, these practices help to foster employee commitment, reduce turnover, and establish a better qualified workforce.
Workforce Pipeline Target Area	

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Developing Internal Staff Skills

Chapter 10 Target Area

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10.1   Workforce Challenges. Programs related to "Developing Internal Staff Skills" are typically designed to address challenges associated with providing employees with the appropriate training and on-the-job experiences necessary for professional growth and development. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Speed of Technology. Organizations are challenged with keeping up with technology and constantly updating information posted online to keep it current and attract more potential applicants. Specifically, finding individuals who know certain software or can operate a certain new piece of machinery is a challenge. Once hired, it is only a matter of time until this individual's knowledge becomes obsolete because the technology has changed again.

Changes in Policy and Technology. Focus group participants suggested organizations feel pressure to comply with new environmentally friendly policies to maintain a positive reputation and comply with governmental initiatives. Some of these policies significantly influence the way many tasks are performed. Employees who are asked to change the method by which they perform their job may consider looking for opportunities outside of the organization, where they can continue to perform their tasks as they have done in the past.

In addition to policy changes, the increased use of technology in the workplace (such as computers, laptops, and PDAs) has caused older workers in some organizations to consider retirement because they often find new technologies to be a source of work-related frustration. Organizations may fail to adequately train these individuals on the new technology, which prevents these individuals from effectively performing their jobs. The rapid adoption of technology without proper training causes some employees to think about looking for opportunities outside of the organization where their ability to contribute is not dependent on their ability to adapt to the latest technology.

The Cost of Training. Participants indicated that the cost of training had been a major challenge for their organizations. Typically, organizations are faced with providing first-rate training on an extremely limited budget. Participants indicated that it is particularly difficult to obtain funds to develop employees in executive and management roles because the senior employees are expected to "hit the ground running" once hired.

Difficulty Providing Sufficient Quality Training. If a particular in-demand training, certification, course, or degree is either offered or financed by a competing organization, it may strongly influence an employee's decision to leave their current employer. Participants often discussed a great deal of variation in the type and quantity of training courses that are available to employees and managers. Participants whose organizations fall on the low end of the leadership training spectrum indicated that their organizations allocate most of the training money to technical training, rather than leadership training. On the other end of the spectrum, one participant indicated that his organization offers a course to help employees understand the role of a manager and whether being a particular manager will be the best fit for the employee.

Organizations are also challenged with determining the right amount and variety of training courses needed to address the variety of functional areas represented by managers. At times, there is not enough money in a budget to provide a training course that is in need. In addition, participants mentioned struggling to find the most effective trainer to lead these programs. As a result, some of the organizations indicated that they have moved away from training consultants and have adopted a policy of using incumbents to lead training even though finding incumbents with good communications skills can be a challenge.

Failure to Apply Training. Participants indicated that getting employees to apply what they have learned from training in their day-to-day activities is a challenge. This indicates that there is often a disconnect between what is emphasized in the training course and the reality of the work environment; it is difficult for staff to diagnose and redirect current work habits, and sometimes external trainers are too removed from the specific tasks and issues of the organization to make the training apply as well as it could.

Failure to Update Training. The rapid pace of technology often leads to related training needs in order to utilize and remain current with new software capabilities. Thus the utility of specific training programs can be quickly depreciated by new functions and technologies. Employees who struggle to stay up-to-speed with new systems and technologies and who feel limited in relevant training opportunities may feel their options diminish within the organization and seek employment elsewhere.

10.2   **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Developing Internal Staff Skills" (see Exhibit 10-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 10-2 Industry Strategies: Developing Internal Staff Skills	
Strategy	*Strategy Description*
Use Job Rotation	Almost all of the focus group participants, both public and private sector organizations, cited the use of job rotation programs within their organizations. Job rotation is a developmental approach where an employee works consecutively through a series of positions to develop skills and obtain a broad exposure to the organization. Rotational assignments are often given to help prepare employees and managers for the responsibility of a higher-level position. Working on several different projects provides these employees with a better understanding of how the organization works as a whole. This also helps to spread institutional knowledge. Most organizations that have job rotation programs reserve these programs for high performers who are selected by a group of managers to participate.
Offer Off-Site and Higher Education Training Opportunities	Organizations indicated that the majority of their organization's training was conducted onsite. However, most participants believed their organizations were moving toward a more blended learning model. The blended learning model includes traditional face-to-face onsite and classroom training, along with offsite training, distance training, and e-training (i.e., Internet-based training). Organizations are also creating partnerships with universities where employees can gain college credit. Some organizations are even offering partial tuition support for employees who pursue relevant degrees and intend to continue working for the organization. Providing employees with incentives to pursue additional education not only conveys to the employee that the organization is invested in his/her development but simultaneously ensures that new and cutting-edge ideas are brought back into the organization.

Exhibit 10-2 (Continued) Industry Strategies: Developing Internal Staff Skills	
Strategy	*Strategy Description*
Offer Certification-Type Programs	Another effective technique is to link together training programs into a certification or program curriculum. The curriculum is specific to a certain job class so that employees in that class must take all the trainings specified to "graduate" or be promoted to the next position. Organizations refer to these as "Corporate Colleges" and have found them to be an effective retention as well as capacity-building tool. Employees are more likely to continue employment and complete a curriculum of training compared to "one-off" training courses. Furthermore, employees are less likely to feel that they are missing out on a traditional college experience if they are enrolled in a "Corporate College."
Tailor Training Opportunities to Build Competency	Participants indicated that when they provide employees with training that specifically meets their needs, they are more likely to stay with that organization. These needs may be linked to their level or position in the organization. For example, positions that involve working closely with customers may require communication skills. Organizations have realized that in some of the more technical fields, communication skills are not being taught in the universities. Therefore, the organizations have implemented training courses that ask employees to write and present material in front of large groups and they are coached and mentored by experienced trainers. In terms of level-specific trainings, participants mentioned formalized training programs for managers. One such program focuses on practices, leadership skills, coaching, procedures, and policies. Another participant mentioned that their organization offers four structured programs geared toward a manager's specific level of management (i.e., front-line supervisors, managers, directors, and senior staff). Some of the more unique training programs are related to an employee's gender or cultural background. Providing training in English as a Second Language (ESL) has helped some organizations decrease on-the-job injury and increase retention. Organizations even hold workshops for women and others for minorities in non-traditional positions (such as construction) in which they review tasks and techniques related to successful retention in those positions. Attendees can discuss problems or issues they have experienced conducting tasks and workshop instructors can help them brainstorm solutions. Organizations have found that alternative populations may not openly seek this type of help in other forums and therefore may otherwise fall behind.
Use Technology to Support Training	Organizations have purchased software that allows an employee to search available trainings, enroll, indicate completion and save the completed trainings to a list of all the trainings they have completed. Beyond adding structure and efficiency to the training process, these systems remind employees of the skills the organization has given to them, which helps increase their organizational commitment. Besides using technology to manage training, some companies use the internet to provide the training courses, which they refer to as e-training. Many of the focus group participants specifically mentioned using e-training in their organizations. E-training allows employees to complete the trainings at night and on the weekends. E-training saves classroom expenses and meets the needs of geographically dispersed employees who may work on non-traditional schedules.

10.3   **Workforce Practices.** Twenty-nine workforce practices that were designed to assist in making the process of "Developing Internal Staff Skills" within transportation agencies efficient and effective were reviewed, and we identified one workforce practice that was most noteworthy within this context:

- North Carolina DOT Transportation Supervisor Conference (TSC)

For this practice, we conducted a case study. A summary of the case study is presented below. The full case study can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study description details each practice's background, implementation, maintenance, evaluation, and transferability.

North Carolina DOT Transportation Supervisor Conference (TSC). The North Carolina Department of Transportation (NCDOT) employs roughly 13,000 people, of which 7,500 work within the Division of Highways. In early 2007, the steering committee for the NCDOT's leadership academy suggested that the academy needed to add technical training. In August of 2007, the idea of a biennial Transportation Supervisor Conference (TSC) was introduced. The goal of the conference was to provide technical training on various work practices in order to instill standardization, effectiveness, and efficiency across the organization.

> *North Carolina DOT Transportation Supervisor Conference (TSC)*
>
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   o Provides technical training on various work practices in order to instill standardization, effectiveness, and efficiency across the organization
>   o Small rotational groups consist of 35 supervisors
>   o Skills learned help supervisors improve communication with their staff, as well as across the entire organization

The first conference was held in February of 2008, after approval by the district engineers and the Secretary of Transportation. Several aspects of the conference's design are meant to ensure a small and focused audience. First, the conference is held three times in three different geographic locations. Each time it is held, it has the same structure and the same presenters. Each conference takes place over a period of 3 days and includes presentations on technical information. On Day One, there is an opening session in the morning and core breakouts in the afternoon. On Day Two, there are technical breakouts in the morning, core breakouts in the afternoon and a closing session at the end of the day. The core breakouts cover topics that all supervisors need to learn. Small groups of 35 supervisors rotate around a schedule of core sessions based on pre-assigned groups. Each group attends all of the core sessions. Typically these small groups share a particular field or background and also attend their technical sections together on the second day. These sessions are not attended by everyone, just those for whom the topic is relevant to the work they do in the field.

In terms of implementation, the conference planning committee had to procure hotel conference rooms, bedrooms, offices, chairs, tables, etc. and had to purchase conference equipment, such as projectors, notepads, pens, pencils, and food. Hosting the conference in 2008 cost NCDOT approximately $220,000; this included meals and accommodations.

In addition to keeping a record of how to manage the conference, NCDOT surveys conference attendees and receives feedback on each individual session. As a result of the conference, supervisors were given the opportunity to hear one of their peers, the conference presenter, explain the value of certain standardized work practices. For example, many supervisors now understand the value of having a work plan and are using this practice in their daily routines. After the 2008 conference, supervisors have been asking for video recordings of the sessions so they can show their staff what they have learned. NCDOT believes that, because of the conference, supervisors have begun to implement more standardized practices with their staff as well as communicate more across the organization when solving problems. One unexpected result was that the conference has put more responsibility on supervisors to disseminate information about standardization to their staff.

Other Example Practices

To serve as an additional resource for agencies interested in "Developing Internal Staff Skills," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- American Road & Transportation Builders Association's Transportation Builder Institute
- Eisenhower Freight and Transportation Logistics Scholarship
- Flexibility in Bus Operator Trainings
- Idaho Cross Utilization Program
- Iowa Roads Scholar Program
- Institute for Transportation Engineers (ITE) Professional Development Training Opportunities Clearinghouse
- ITE Web-based Learning Tools
- Job Rotational Programs
- Local Community Outreach – Louisiana Local Technical Assistance Program
- Louisiana Transportation Research Center (LTRC) Training Programs
- Master's Degree Training at Offsite University for Civil Engineering
- Missouri DOT Employee Development Program
- National Highway Institute Training Program for Transportation and Transit Agency Positions

- National Transit Institute
- On The Job Training Program
- Oregon Certificate of Public Management Programs
- Professional Capacity Building Programs
- Roadway Safety Training Institute/ Corporate Training Program
- State Agency Training Programs
- The Consortium for ITS Training and Education
- Train-the-Trainer "SmartDriver" Program
- Train Your Own Information Technology Staff
- Training "Overlearning"
- Training to Accommodate New Transit Technologies, SunLine Transit
- Transport Workers Union of America's Community Transportation Development Center
- Transportation Training and Education Center
- Truck Driving Academy

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 11: Improving Culture/Climate

The climate and culture of the organization significantly impacts whether individuals feel they "fit" with the organization, their desire to remain committed to the organization, and ultimately whether employees stay with the organization. Even in challenging economic times, when individuals are less likely to leave an organization, culture and climate can still impact the extent to which employees stay engaged and remain contributing members of the organization. In this chapter, we present challenges, strategies and workforce practices related to "Improving Culture/Climate." Exhibit 11-1 provides a chapter snapshot.

Exhibit 11-1 **Snapshot of Chapter 11**	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..………..........**82** ▪ **Applicant Trust After Layoffs** ▪ **Public Sector Challenges** ▪ **Retaining a Diverse Workforce** **Industry Strategies**…………………**82** ▪ **Improve the Work Environment** ▪ **Engage the Community** ▪ **Survey and Interview** ▪ **Engage the Employees** **Workforce Practices**…..……………**84** ▪ **City of Annapolis DOT (ADT) Inter-Office Committee (IOC)** ▪ **South Carolina DOT Rehabilitation Program**	 Building a strong, supportive culture and climate can help to increase communication, commitment, and effectiveness in operations.
	Definition of Improving Culture/Climate: Involves building a strong and supportive environment, where employees feel their values are aligned with those of the organization. The goal of these efforts is to increase an employee's desire to remain committed to the organization. As a result, these practices help to increase communication, commitment, and effectiveness in operations.
Workforce Pipeline Target Area	

	Target Career Stages						
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Improving Culture/Climate

Chapter 11 Target Area

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11.1 **Workforce Challenges.** Programs related to "Improving Culture/Climate" are typically designed to address challenges associated with creating a strong and supportive environment where employees feel they "fit." These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Applicant Trust After Layoffs. Organizations that are laying-off employees or implementing hiring freezes are challenged when they reinitiate hiring. Applicants who are aware of the lay-offs tend to look for other organizations that they believe are more stable.

Public Sector Challenges. Results indicated that organizations are challenged with retaining employees who are frustrated by political cycles, such as when one political appointee pressures workers to complete a project before the end of a term and then the next political appointee asks them to reverse their efforts or leave tasks unfinished. Organizations also struggle to maintain the same level of employee recognition and motivation when they are forced to eliminate picnics, parties, and bonuses because of changes in budget allocations.

Retaining a Diverse Workforce. Participants suggested organizations are challenged with retaining women who decide that the nature of the work environment is not the right fit for them. This could occur because of lack of workplace flexibility in accommodating changing family or caretaking demands, lack of comfort with workplace culture, physical demands, or other reasons.

11.2 **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Improving Culture/Climate" (see Exhibit 11-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 11-2 Industry Strategies: Improving Culture/Climate	
Strategy	*Strategy Description*
Improve the Work Environment	Participants indicated that retention can be improved by creating a safe and diverse work environment. They indicated that if organizations took real steps to improve safety in the workplace, workers would be more likely to stay with an organization. Some organizations have been successful in holding regular meetings with workers to gather feedback about unsafe situations.
Engage the Community	Organizations work with community and school organizations (such as attending meetings and developing partnerships) to achieve the following: improve industry image, build a network of employee candidates, gain community support, improve visibility in the local community, and make community members aware of industry needs and career options. As mentioned, our participants indicated that employees often feel a greater commitment to organizations that give back to the community.

Exhibit 11-2 (Continued) Industry Strategies: Improving Culture/Climate	
Strategy	*Strategy Description*
Survey and Interview	In the past, satisfaction surveys have been used to assess the climate of the entire organization and some changes in policy were made based on the feedback gained. With larger organizations, the policy changes that positively affected one group may have caused another group to become dissatisfied. Organizations are now using more satisfaction or climate surveys with smaller groups than in the past. These surveys are being administered to teams, offices, or communities of practice, instead of entire organizations in order to more specifically identify potential issues. Larger organizations found that this was more effective in meeting the unique needs of the smaller, more manageable groups. Employee engagement is another area being assessed through organizational surveys. Employee engagement is the extent to which an employee feels a sense of commitment to the organization and to the work that they do. Organizations have found that engagement typically impacts the retention of high performers whereas satisfaction tends to have a greater affect on the retention of medium performers or "worker-bees." A 2008 survey on global talent management found the following were the top six factors for men and women, with regard to engagement: (1) Having a Supportive Work Environment, (2) Having a Challenging Job, (3) Having a Good Fit between Life On and Off the Job, (4) Working at a Company that Has High Values, (5) Being Well Compensated, and (6) Having the Opportunity for High Achievement (Galinsky, Carter, and Bond, 2008). Organizations also use exit interviews to gather feedback from employees who have decided to leave the organization. An exit interview is a series of questions that are either asked face-to-face with the employee or in the form of a survey. The value of an exit interview is that the employee may give more honest feedback because they are no longer part of the organization. The method of exit interviewing varies. Organizations have found success when former employees have the option of being anonymous when providing feedback and if they are given the option of filling out the survey after their last day at work. These two strategies may elicit more honest feedback that should be considered when organizational policy changes or personnel decisions are made. Finally, organizations have started to notify employees via email and web portals when action is either taken or not taken based on employee feedback. This conveys a sense of transparency to the employee making them feel that the organization is listening to them as a collective group. Two factors that are important to consider with feedback systems to maintain their effectiveness are: (1) that some of the feedback must be acted upon and (2) if feedback is not acted upon, it must be accompanied by an explanation.
Engage the Employees	For newer employees, organizations have begun to implement a second orientation session around 6 months after employees are hired to go over more of the organization's history, objectives, and goals, as well as re-emphasizing benefit enrollment, corporate policy, and security compliance. Organizations have found that there is only a finite amount of information employees can handle when they are starting a new job but that they are more

Exhibit 11-2 (Continued) Industry Strategies: Improving Culture/Climate	
Strategy	*Strategy Description*
	likely to retain organizational information after a few months of learning their new job. Secondly, organizations have found that the 6 month point is a critical time in retention where employees are evaluating their job choice. Engaging them at this time may positively influence their decision to stay with the organization. For more tenured employees, organizations have found ways to connect front-line personnel directly with executives. This can be accomplished through anonymous web portals or face-to-face interviews known as "Stand-Up" or "Town Meetings." In some cases, representatives of corporate leadership travel from one office to another holding focus groups or interviews where, without their immediate supervisors, employees can provide feedback on the work environment, leadership, and climate of that office. Two important aspects of these tools are that employees cannot experience incidents where they are retaliated against actively or passively for providing feedback and action must be occasionally taken based on the feedback received.

11.3   Workforce Practices. Eight workforce practices that were designed to assist in making the process of "Improving Culture/Climate" within transportation agencies efficient and effective were reviewed, and we identified two workforce practices that were noteworthy within this context:

- City of Annapolis DOT (ADT) Inter-Office Committee (IOC)
- South Carolina DOT (SCDOT) Rehabilitation Program

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

City of Annapolis DOT (ADT) Inter-Office Committee (IOC). The city of Annapolis Department of Transportation employs 106 people among three components, including drivers, mechanics, and administrators. The agency provides transportation to recreational areas, shopping centers, educational and medical facilities, and employment hubs via three shuttle routes, a fixed-route system comprised of 11 routes, and a deviated fixed-route service offered to the elderly and persons with disabilities.

The city of Annapolis Transit Department started developing and piloting the concept for the Inter-Office Committee (IOC) in 2005. The idea of the IOC came from a teamwork training course that the agency's director attended. During this time, it became apparent to management that it was difficult to get everyone on the same page in terms of following policy because messages from the director would either not be received or be manipulated before reaching the front lines. Break-downs in communication caused some employees to become disgruntled and morale was dangerously low.

> ### City of Annapolis DOT (ADT) Inter-Office Committee (IOC)
>
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - Fosters inclusive decision making among employees allowing them to take ownership of problem solving within the Department
>   - ~6 employees at each monthly meeting
>   - Significantly increases employee morale

The Inter-Office Committee (IOC) holds monthly meetings where two volunteer representatives from each of the department's three components discuss issues and develop solutions. The purpose behind the program is to foster inclusive decision-making among employees allowing them to take ownership of problem solving within the department. Representatives not only bring information to these meetings but also take information back to their components with the responsibility of disseminating the information to other co-workers. There are typically six employees at each meeting. Meetings last between 1 hour and 90 minutes. Representatives serve for a period of 6 months, at which time they are replaced and new volunteers serve. Volunteers commit to maintaining performance equivalent to other employees and to accepting the responsibilities that are delegated to them by the committee.

The first step in implementation of the IOC was to meet with each agency component and disseminate information about the new program. The second step was to ask for volunteers. The third step was to hold the first meeting. Ongoing steps include holding meetings, recording minutes, briefing the director, solving problems, educating new volunteers on the program, and evaluating the program's success. The pilot program started in 2005 and lasted for 2 years.

The result of the program has been a significant increase in employee morale. Employees express excitement to volunteer for the group. One specific example is that, in the past, memos with new information or policy changes were handed to employees in paper form and employees signed-off that they read the memo. The tendency has been for drivers to only pay attention to operational information and then feel uninformed when it came to administrative or mechanics component information. The group decided to supplement written notification with monthly "Driver Meetings," which are staff meetings for the driver component. The "Driver Meetings" and written memo combination has been more effective in making sure that drivers hear the necessary information. The drivers also decided that a portion of the meeting should be used to collect issues for the IOC to discuss. Drivers that have been part of the committee report that being part of the group gave them a better understanding of how the department works and how they fit into the big picture. It also gives employees a process by which to solve problems they encounter in the field as opposed to the common process before where they would just immediately fill out a grievance with the union. If their issue cannot be solved by the group, they are still provided

with information on why the issue exists. Issues that are not addressed are commonly incorporated into training programs. Another workforce issue that this process has helped to alleviate is the tendency for employees who are performing below an acceptable level to go unidentified until after their probationary period. After this period, it is more difficult to terminate these employees. Now, with the IOC, poor performers are quickly identified and terminated.

South Carolina DOT Rehabilitation Program. The South Carolina Department of Transportation (SCDOT) has approximately 5,000 to 5,300 people deployed across the state with about 900 people in their central headquarters, located in Columbia. In late 1997 and 1998, SCDOT had begun its strategic planning process and the state was also experiencing robust economic growth. During this time, SCDOT experienced significant turnover and realized the need for work environment changes. SCDOT did not have the financial ability to increase employee compensation. In addition, many SCDOT facilities in the districts were in need of significant refurbishing. At the time this program started, state government also had a privatization push which led to an increased use of contractors and moved some of SCDOT's maintenance workers from field jobs to supervisory jobs providing oversight to the contractors. This move to more desk jobs made facility improvements that much more important since workers began spending more time in the facilities. SCDOT determined that making basic updates to the facilities would help to enhance the work environment for employees and hopefully maintain good employee morale. While the idea to make these structural changes to buildings began in 1998, the program (entitled the "rehabilitation program") officially launched in 2000.

> *South Carolina DOT Rehabilitation Program*
> - **Job Type:** Maintenance
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   o Prior to the program's initiation, more than 46% of buildings were 30+ years old and had yet to be updated
>   o Since 2000, SCDOT spent from one to two million dollars per year rehabilitating buildings
>   o Helps decrease turnover and safety violations, while improving environmental practices and employee morale

Prior to the initiation of the rehabilitation program, more than 46% of SCDOT buildings were 30+ years old and had yet to be updated. Some of the initial changes made to facilities included adding restrooms or improving existing restrooms. Initiatives focused on addressing basic human needs. Starting in 2000, SCDOT spent from $1 to $2 million per year rehabilitating buildings by making improvements to electrical systems, heating and air conditioning, the work space, replacing windows and doors, and generally improving the work environment. In the past 8 years, SCDOT has spent approximately 20% of its capital improvement budget on the rehabilitation program. Recently, due to a decrease in new construction projects, the rehabilitation program has accounted for approximately 50% of the agency's capital improvement budget.

While direct measures of employee satisfaction with the rehabilitation program have not been utilized, "word of mouth" claims by employees, overall observance of employee morale, decreased turnover, decreased safety violations, and improved environmental practices all suggest this program has been successful.

Other Example Practices

To serve as an additional resource for agencies interested in "Improving Culture/Climate," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Annual Employee Surveys
- Employee Work Space Upgrade
- Florida DOT Uniforms for Maintenance Workers Program
- High Employee Involvement as a Strategy for Retention
- King County Metro Transit Culture Change
- Organizational Integration Survey

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 12: Leadership Development

Leaders set the direction for employees and set the tone for the organization. Leadership skills are distinct from technical skills; therefore, sound training and management skill development are important components to a successful leader development program. In this chapter, we present challenges, strategies and workforce practices related to "Leadership Development." Exhibit 12-1 provides a snapshot of the chapter.

Exhibit 12-1 Snapshot of Chapter 12	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..……........**90** ▪ **Interviewing Skills** ▪ **Difficulty Choosing Leaders** ▪ **Lack of Training for Leaders/Supervisors** **Industry Strategies**…………………**90** ▪ **Provide Leadership Training** ▪ **Implement Leadership Development to Support Specific Demographic Groups** ▪ **Emphasize Follower Development in Leadership Training** ▪ **Mentor and Coach Leaders**	 Innovative transportation organizations have begun to provide managers with not only technical training, but also leadership training regarding how to motivate, evaluate, and provide recognition to employees.
Workforce Practices…..……………**91** ▪ **Maryland State Highway Administration (SHA) Advanced Leadership Program (ALP)** ▪ **Santa Clara Valley Transportation Authority (VTA) Joint Workforce Investment (JWI) Program**	**Definition of Leadership Development:** Involves sound training and management skill development. Should also consider the unique needs of female and minority staff to help remove obstacles to their development as leaders. These practices help organizations to better develop leaders throughout the agency.
Workforce Pipeline Target Area	

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Leadership Development

Chapter 12 Target Area

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12.1   **Workforce Challenges.** Programs related to "Leadership Development" are typically designed to address challenges associated with developing supervisors' communication and management skills needed to maintain healthy relationships with their employees. Furthermore, identifying and implementing training that teaches these skills to supervisors is a major challenge due to their expense in time and resources, stringent training budgets, lack of buy-in from top management, and resistance to change. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Interviewing Skills. Participants indicated that some supervisors at their organization do not possess the skills necessary to determine whether a candidate is qualified for the job or to compare candidates in different skill areas. Organizations struggle to ensure that applicants are getting an unbiased and valid evaluation.

Difficulty Choosing Leaders. Our findings suggested that poor management or relationships with supervisors can force employees who like their job and perform well to leave an organization to seek better leadership. Poor management often results from internal recruitment practices that place individuals in supervisory positions based on technical skills rather than managerial skills. While it is helpful for individuals in management to have institutional and technical knowledge, this knowledge does not substitute for effective leadership skills.

Lack of Training for Leaders/Supervisors. The phrase "employees don't leave companies, they leave supervisors" was commonly mentioned among focus group participants. Organizations struggle to convince supervisors that they must communicate in a way that each can hear or to improve skills. This issue of mismanagement is not only concerned with the frequency of direction or feedback but also related to the clarity and applicability of the communication. Participants indicated that their organizations do not provide enough training programs that specifically teach supervisors how to communicate, motivate, and lead employees. Some supervisors do not have regular one-on-one conversations with their employees because the supervisors do not realize the benefit of communicating and motivating employees differently when needed. Organizations are challenged with evaluating managers and finding ways to transfer "soft skills." The organizations also struggle to get managers to frequently recognize, and in some cases not feel threatened by, employees who exceed performance expectations. Exit interviews show that the majority of employees decide to leave because they feel under-appreciated, while still others feel they are being overworked without recognition.

12.2   **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Leadership Development" (see Exhibit 12-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 12-2	
Industry Strategies: Leadership Development	
Strategy	*Strategy Description*
Provide Leadership Training	Organizations have begun to provide new managers with not only technical training, but also training regarding how to motivate, evaluate, and provide recognition to employees. These courses convey to supervisors that the organization wants to provide them with the right skills necessary for success

Exhibit 12-2 (Continued) Industry Strategies: Leadership Development	
Strategy	*Strategy Description*
	as a leader. Organizations are also providing supervisors with specific training in how to conduct performance evaluations. This training includes how to document and score performance as well as how to give meaningful, actionable feedback. Courses discuss how the type and method of conveying feedback should be influenced by the personality of the employee receiving the feedback.
Implement Leadership Development to Support Specific Demographic Groups	Female and minority workers often find they face unique challenges as they develop as leaders. For this reason, it is important for organizations to provide specific leadership development programs to address their needs.
Emphasize Follower Development in Leadership Training	Research results indicate that leaders who receive transformational leadership training have a more positive impact on direct follower development and on indirect follower performance, thereby improving overall organizational effectiveness, as opposed to leaders who receive traditional transactional training (Dvir et al., 2002).
Mentor and Coach Leaders	Organizations indicated that mentoring and coaching programs are a method they use to develop their high-potential employees and that this helps with retention. The mentoring programs mentioned were formal, informal, or a combination of the two. One participant's corporate leadership team informally mentors more junior managers. Although the process is informal, there is a commitment that each leader mentors at least one employee. In another participant's organization, executives are formally provided a mentor/coach who works with them during the on-boarding process and helps them transition into the organization. In some cases, an employee's mentor is his/her boss, whereas in other cases the employee may be able to choose his/her own mentor.

12.3   **Workforce Practices.** Eleven workforce practices that were designed to assist in making the process of "Leadership Development" within transportation agencies efficient and effective were reviewed, and we identified two workforce practices that were noteworthy within this context:

- Maryland State Highway Administration (SHA) Advanced Leadership Program (ALP)
- Santa Clara Valley Transportation Authority (VTA) Joint Workforce Investment (JWI) Program

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

Maryland State Highway Administration (SHA) Advanced Leadership Program (ALP). The
Maryland State Highway Administration (SHA) has approximately 3,100 employees, many of which are
at the top of their career tenure with 20 to 30 years
of experience. In 1988, members of the Maryland
State Highway Administration's (SHA) executive
team designed and implemented the Advanced
Leadership Program (ALP). SHA was, and
currently is challenged with recruiting and
retaining mid-career employees with 10 to 20
years of experience. The majority of the agency
has either between 5 and 10 years of experience or
nearly 30 years and often more. The agency is
struggling to convince newer employees that SHA
is a place where they can not only learn, but also
advance and build a career. The program was
created to avoid situations where leadership
positions were vacated before the agency had
identified and prepared an employee to fill that
position.

> ### Maryland State Highway Administration (SHA) Advanced Leadership Program (ALP)
>
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - Created to avoid situations where leadership positions were vacated before the agency had identified and prepared an employee to fill that position
>   - Employees must apply and be accepted into the two-year training program
>   - Results in an increase in the number of qualified leaders that were prepared and ready to move into higher levels of leadership responsibility

The ALP is a two-year training program that
provides select SHA employees with the opportunity to develop and refine their leadership skills.
Employees must apply to be a participant in the ALP. The selection process is very competitive and only
around five to ten applicants are selected from the more than 30 that apply. Once they have been
accepted, they are provided with an individual development plan (IDP). IDPs, developed jointly by the
participant and the ALP sponsors, focus on four areas: leadership, career, personal, and community. The
IDP requires the participant to first identify leadership areas they need to develop, propose specific tasks
that will facilitate the desired development, and then propose criteria that would signify successful
completion of those tasks. ALP participants can use job rotation, job shadowing, and participation in
statewide panels or task forces, among other avenues, to complete their tasks. In addition to the IDP,
participants begin attending both internal and external leadership courses structured around a core
curriculum of training modules.

The results of the program are an increase in the number of qualified leaders that are prepared and ready
to move into higher levels of leadership responsibility when those opportunities become available.
Another result is an increase in tenure for those junior leaders who would have otherwise moved on to
higher-paying private sector positions if not for their involvement in the ALP. Classes have worked
together to implement projects. They managed conferences like the Smart Growth Conference (Class of
2000), developed manuals and guidelines like the Baldrige Assessment Guidelines (Class of 2005), and
developed the approval process for the placement of bus stops (Class of 2003). The Class of 1994
established a SHA resource center or library for employees. The Class of 2002 developed a guide for
community involvement called "Enhancing Maryland Highways with People in Mind." Not only has the
program produced the desired result of increasing the number of qualified leaders, but also it has
delivered unexpected results such as increasing the number of working mothers in leadership positions.

Santa Clara Valley Transportation Authority (VTA) Joint Workforce Investment (JWI) Program.
The Santa Clara Valley Transportation Authority (VTA) employs roughly 2,100 people, of which 650
work in maintenance. In addition, VTA is combined with the Congested Management Agency (CMA),
which adds another 800 employees to the total workforce.

VTA's Joint Workforce Investment (JWI) program,
established in 2006, is a joint labor-management
partnership between VTA) and the Amalgamated
Transit Union Local 265 (ATU). Both organizations
operate together as one "JWI" team. Three primary
programs were brought together under the JWI
initiative.

The first program is called the Maintenance Career
Ladders Training Project (MCLTP). This one-year
project ended in 2008. During that time, it established
the Mechanic Helper program. The maintenance
division has three positions: (1) service worker, (2)
service mechanic, and (3) full transit mechanic. First,
the program involved utilizing funding that was meant
to support the salaries of vacant full transit mechanic
positions and reallocating that funding to create
vacancies at the mechanic helper (mechanic trainee)
level. The program then provided training to mechanic
trainees for them to be eligible for promotional
opportunities. The external mechanic helper training
involved enrolling employees in an 18-month Associate's degree program at local community colleges.
Once employees at the mechanic helper level had completed the required training, they were promoted
into the service mechanic positions. In doing this, VTA addressed the bus mechanic shortages and
provided members of the community with living-wage-level employment.

> *Santa Clara Valley Transportation Authority (VTA) Joint Workforce Investment (JWI) Program*
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   o A joint labor-management partnership between VTA and the ATU
>   o Led to the creation of three programs, including Maintenance Career Ladders Training Project (MCLTP), New Operator/Mentor Pilot Project , and Health and Wellness Project
>   o Resulted in an increased level of skill and organizational commitment across the VTA

The second program is the New Operator/Mentor Pilot Project. This 1-year pilot project, now complete,
paired 26 new operators who graduated in January 2008 with 17 veteran exemplary operators who acted
as mentors. The program provided best practice customer service and job stress coping skills through on-
the-job mentoring and classroom training. At the beginning of the mentoring relationship, the new
operators would spend 8-hour days on the veteran's bus and then later the veteran would spend a similar
amount of time on the new operator's bus. This early intervention prevents new operators from
developing bad habits and attitudes that amplify stress.

The third program is the Health and Wellness Project. This mentor-led, "operator to operator" project
conducts various informal activities at the three bus operating divisions to promote the JWI approach to
health, wellness, and professional development. Activities emphasize mastering the "human element" of
driving a bus and applying stress management/health and wellness techniques. During the project, new
operators are brought in to a classroom to debrief after completing some initial driving time. They discuss
their experiences and whether or not they were able to release the stress that some situations may have
caused them.

The Deputy Director of Maintenance, representing the maintenance division management, a
representative of technical training in the maintenance division and a union representative, led the
implementation effort. Some of these meetings involved an HR representative and other union
representatives. The group met several times over a 6-month period and eventually drafted a

memorandum of agreement, which addressed the relationship between the new program and the collective bargaining agreement. They also worked to develop and submit grant requests to support JWI. With a brief explanation of the goals of the program, the team obtained signatures of approval from VTA's General Manager, Chief Operating Officer (COO), and president of the union. There was a cost to implementing the program. Direct costs were associated with planning and design meetings ($300,000 in time spent) and consulting services ($18,000), while indirect costs occurred from having employees in training instead of doing their regular job. Some of the indirect cost can be negated by offering trainings after hours.

As a result of JWI, the level of skill and organizational commitment across the VTA increased. Specifically, ten mechanic helpers graduated from their training programs and were promoted into the ten service mechanic vacancies. Retention of new bus drivers rose from 80% to 100% for participants of the program. Anecdotal conversations between the management team and employees have indicated that employee morale has also increased due to the program. For example, employees who formally envisioned being in service worker positions for the rest of their careers have now begun to actively pursue promotional opportunities. Additionally, retention statistics tracking and exit interviews, self-assessments, and anecdotal conversations with operators have indicated that the mentoring and health and wellness programs have had a positive impact on their work experience. Comparison of statistical records and other indicators between mentored and non-mentored operators revealed dramatic differences in key indicators of competence and confidence. A Program Performance Statistics Summary used by VTA benchmarked quarterly data comparing JWI participants and non-JWI participants on four categories: absenteeism, retention, number of grievances, and complaints. According to the data collected each quarter, this initiative helped the agency alleviate several workforce issues. For example, the data collected from April 1, 2009, to June 30, 2009, shows the following for bus operators:

- Less absenteeism in JWI vs. non-JWI (3.5% vs. 8.5%)
- Higher retention rate in JWI vs. non-JWI (100% vs. 84.3%)
- Slightly less grievance per employee in JWI vs. non-JWI (0.5 vs. 1.7)
- Slightly less complaints per employee in JWI vs. non-JWI (0.5 vs. 2.0)

Other Example Practices
To serve as an additional resource for agencies interested in "Leadership Development," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Employee Empowerment and Decentralization of Decision Making
- Eno Center for Transportation Leadership (CTL) Transit Executive Seminar
- International Bridge, Tunnel and Turnpike Association (IBTTA) Leadership Academy's Executive Development Program
- Leadership Education and Development
- Leadership Development and Succession Planning Integration
- Management Development Training
- The Women's Network
- Washington Metropolitan Area Transit Authority's (WMATA's) Training Program
- Young Executive Development Program

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 13: Job Classification and Design

Valid job descriptions and a sound job design serve as central components for many Human Resource (HR) functions, including recruitment, retention, training, and development activities. Thorough and accurate job descriptions are also necessary to ensure that employees' skills fit with the requirements and context of the job. In this chapter, we present challenges, strategies, and workforce practices related to "Job Classification and Design." Exhibit 13-1 provides a snapshot of the chapter.

Exhibit 13-1 Snapshot of Chapter 13	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..……........96 ▪ **Aversion to Manual Outdoor Labor** ▪ **Lack of Flexibility and Autonomy** ▪ **Lack of Learning Opportunities** **Industry Strategies**…………………96 ▪ **Create Dual Career Tracks for Managers and Technical Experts** ▪ **Emphasize Job Enrichment** ▪ **Create Advancement Within Positions** **Workforce Practices**…..……………97 ▪ **Minnesota DOT Transportation Specialist Series (TSS)** ▪ **Pennsylvania DOT Position Analysis Workbooks (PAWS)**	 Job Classification and Design allows organizations to better classify and design jobs to maximize the recruitment and retention of employees.
	Definition of Job Classification and Design: Involves designing jobs to possess the appropriate scope of tasks and skills required; allows for employees to stay interested and challenged without being consistently overburdened.

Workforce Pipeline Target Area

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Job Classification and Design
Chapter 13 Target Area

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13.1   **Workforce Challenges.** Programs related to "Job Classification and Design" are typically designed to address challenges associated with differing levels of hiring expectations among this new generation of workers. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Aversion to Manual Outdoor Labor. When participants were surveyed about why they thought an individual might be deterred from taking a job in transportation, more than three-quarters of the DOT contractors suggested that it was due to the nature of the work and job description (Cronin et al., 2007). Specific responses from the contractors as to why the transportation jobs might appear unattractive to some include "long, hot working hours," "working outdoors," "working outside in elements, hard work," and "being outdoors, sun, insects, dirt, getting dirty." Asphalt work in particular, involves high temperatures, and repavings constitute the bulk of DOT construction work in the last decade and the foreseeable future, though such construction work is almost entirely contracted out. Organizations are struggling to find ways to make these positions more attractive beyond raising the salary.

Lack of Flexibility and Autonomy. More than a one-quarter of participants in one of our studies suggested that the lack of flexibility (i.e., when and how work is done) or lack of autonomy (i.e., working independently) currently poses the greatest challenge to recruiting quality unskilled transportation workers (Cronin et al., 2007). Participants indicated that flexibility and autonomy are hard to achieve based on the demands of the work in transportation. For example, drivers often demand work that is conducted during off-peak hours and at night resulting in difficult work hours for entry transportation workers. Participants agreed that it may be difficult to design some transportation jobs to be flexible and autonomous yet some of the participants argued there may be some changes that would improve the attractiveness of the job. Organizations indicated that the next generation of workers is looking for these elements in a job (Cronin et al., 2007).

Lack of Learning Opportunities. Organizations are challenged with providing enough learning opportunities in entry-level positions. Members of the younger workforce are looking for positions where they will be challenged and encouraged to increase their skill set. Unfortunately, this is not typical of many entry-level positions, where tasks are usually repetitive and do not require a lot of problem solving.

13.2   **Industry Strategies.** Attracting younger workers to transportation jobs may require job redesign. Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Job Classification and Design" (see Exhibit 13-2). While these strategies represent the general direction of HR departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 13-2 Industry Strategies: Job Classification and Design	
Strategy	*Strategy Description*
Create Dual Career Tracks for Managers and Technical Experts	Organizations are exploring new ways to ensure that employees have more well-qualified supervisors and managers. Organizations have found that some employees are not well suited, even with training, to manage other employees. As a result, organizations have begun to create dual career tracks with a more traditional path accentuating management skills and an alternative path emphasizing technical expertise. The alternative path allows employees to advance without employee management as a requirement. Essentially, if an employee is technically savvy but does not possess the skills to lead people,

| Exhibit 13-2 (Continued) Industry Strategies: Job Classification and Design ||
Strategy	*Strategy Description*
	even after training, they are offered a technical career path, where they advance in responsibility, decision making, and compensation but do not manage employees. These technical employees help to design tasks but employee managers lead the implementation. Without supervision responsibilities, technical leaders are expected to take on more responsibilities in the report writing or compliance arena.
Emphasize Job Enrichment	Job enrichment refers to redesigning jobs to involve greater variety, responsibility, meaningfulness, autonomy, and feedback. These job aspects motivate employees by giving them the opportunity to use the range of their abilities (Hackman and Oldham, 1976). Research has shown that job enrichment reduces turnover (McEvoy and Cascio, 1985).
Create Advancement within Positions	Organizations have found a method of motivating their employees and creating potential for advancement through skill-based compensation. They are taking each job in the organization where the concept is appropriate and breaking the job down by capacities and skill levels (e.g. "beginner" to "advanced"). The number of levels varies between organizations (PennDOT's Transportation University and capacity-based approach set up 10) but each level is connected to a set of skills and corresponding tasks that represent competency in the skill set. Employees enter at the lowest level and are required to demonstrate their competency in each required skill set to at least two supervisors before being promoted to the next level. The promotion involves a small pay increase, which tends to be the most motivating factor in these programs. This concept creates opportunity for advancement within a single position. This can be an effective solution if opportunities for advancement are rarely available.

13.3   Workforce Practices. Four workforce practices that were designed to assist in making the process of "Job Classification and Design" within transportation agencies efficient and effective were reviewed, and we identified two workforce practices that were the most noteworthy within this context:

- Minnesota DOT Transportation Specialist Series (TSS)
- Pennsylvania DOT Position Analysis Workbooks (PAWS)

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

Minnesota DOT Transportation Specialist Series (TSS)*.* Minnesota Department of Transportation (Mn/DOT) employs 5,033 people in a variety of employment conditions (i.e., temporary, unlimited, full-time, part-time). In 1999, the Minnesota Department of Transportation (Mn/DOT) implemented the Transportation Specialist Series (TSS) after a decision to combine three series that composed 45% of the agency's workforce. These classifications were the Highway Technician Series, Highway Maintenance Worker Series, and Bridge Worker. The intent of the combined classifications was to increase agency efficiency and responsiveness, to assist the department in dealing with peaks and valleys in work, and to simplify the deployment of resources when needed (the right skills, in the right place, at the right time). Employees in those classifications were converted to the new classification with the intent to focus on workforce planning and professional development to target current and future skill needs. The TSS program aimed to:

> *Minnesota DOT Transportation Specialist Series (TSS)*
> - **Job Type:** Maintenance
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - Combination of Highway Technician Series, Highway Maintenance Worker Series, and Bridge Worker
>   - Focus on workforce planning and professional development to target current and future skill needs
>   - Helps agency remain competitive, develop a more flexible workforce, and meet customer expectations

- Create an environment in which flexible, multi-skilled workers are deployed to the fullest capacity
- Provide increased flexibility in employee assignment
- Improve opportunities for employees to make decisions regarding their daily work activities
- Increase training and skill development opportunities for line employees
- Create a link between employees' skill development and mastery and their wage progression

The program has enabled Mn/DOT to pull back from movement toward two temporary seasonal workforces, summer and winter, easing recruitment and retention issues. It has also improved employees' abilities to make decisions about their daily work activities and their opportunities to progress through the series, where promotion opportunities historically have been limited. The agency has also been able to better handle staffing issues due to increases in retirements and budget constraints related to limited financial resources and state agency directives implementing hiring restrictions. In working with the union to develop the program, Mn/DOT was also able to negotiate away pay differentials for intermittent supervisors and equipment operators in exchange for fewer restrictions on seniority-based labor contract work rules related to job assignments, equipment operation, and Mn/DOT's overall ability to assign work on both a temporary and permanent basis. One initial goal of the program that has not been achieved is the implementation of skill-based pay.

Communication about the TSS program was a key element in its implementation department wide. For example, one district developed a TSS 101 training/communication program that outlined the basics of the program. The TSS 101 training program with talking points was rolled out in all districts. The transition was resource intensive, employing support from 15 HR professionals and approximately seven full-time employees in addition to countless management hours required to facilitate the program's success. Another important aspect of the implementation process was the TSS labor management committee as a cooperative effort between Mn/DOT and the union to address TSS implementation issues of mutual concern.

Implementing TSS has saved Mn/DOT money in the long run, specifically by allowing the agency to achieve better employee utilization through shifting employees to where there are current workforce

needs. Furthermore, TSS has helped the agency achieve better equipment utilization by negotiating language in employment contracts that eliminates differential pay based on operating mechanical equipment. Implementing the TSS concept is one of a number of business strategies to allow Mn/DOT to remain competitive, develop a more flexible workforce, and meet customer expectations.

Pennsylvania DOT Position Analysis Workbooks (PAWS). The Pennsylvania Department of Transportation (PennDOT) has approximately 12,000 employees, not including consultants or contractors, of which roughly 10,500 are engaged in maintenance, restoration, and expansion of the highway system. The agency is divided into six main divisions, known as deputates, which include highway administration, safety administration, planning, aviation and rail freight, local and area transportation, and administration.

PennDOT has implemented a program called Position Analysis Workbooks (PAWs) to address recruitment and retention efforts and support career pathing and succession planning. A PAW describes the roles, responsibilities, and tasks that are performed in a given position in PennDOT and the competencies and training necessary for an individual to be successful in the position. To develop a PAW for a position, PennDOT convenes a focus group consisting of employees currently serving in the position or those supervising employees in the position. The focus groups are moderated by someone who serves as a Subject Matter Expert (SME) and helps the group to devise a strategy or a series of steps for PennDOT employees to succeed in the position described in the PAW. PennDOT works to assign a PAW to each major position in the organization.

> ### *Pennsylvania DOT Position Analysis Workbooks (PAWS)*
>
> - **Job Type:** All
> - **ROI:** Short- to Mid-term
> - **Generation:** All
> - **Key Program Highlights:**
>   o Aimed at addressing recruitment and retention efforts and supporting career pathing and succession planning
>   o Describes the roles, responsibilities, and tasks that are performed in a given position, while also linking the competencies and training necessary for an individual to be successful in the position
>   o Provides proper training and career direction to employees and helps improve organizational efficiency and effectiveness

The Center for Performance Excellence led the implementation of PAWS within the Transportation University structure, an entity separate from Human Resources (HR), which used to be housed under the Deputy Secretary for Administration for Pennsylvania. The Transportation University leadership obtained organizational buy-in from PennDOT administrators and leadership, and department managers and supervisors were made aware of PAWs as a tool that may be useful to them. PennDOT worked with an outside contractor to create the model for PAWs, which had associated costs, but the PennDOT-specific PAWs have been created internally.

While PennDOT does not have direct measures to evaluate the PAWs program, PennDOT supervisors, training coordinators, and employees interested in advancement consider PAWs a valuable resource that have guided recruitment and likely affected retention as well. PennDOT management views PAWs as a way of providing proper training and career direction to employees and views PAWs as a benefit to organizational efficiency and effectiveness.
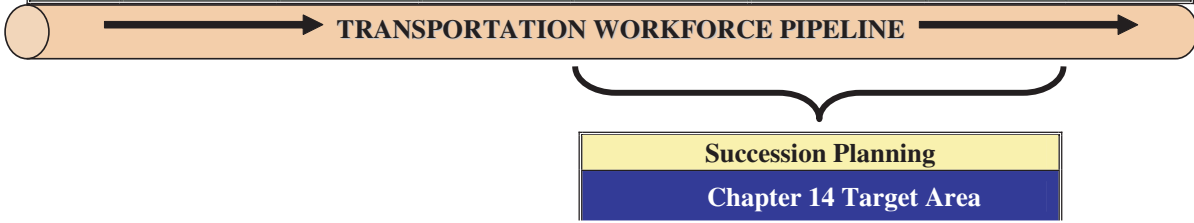
Other Example Practices

To serve as an additional resource for agencies interested in "Job Classification and Design," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Job Enrichment
- Use of Temporary Workers or Interns

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 14: Succession Planning

Succession planning is the strategic process of identifying and preparing high-potential employees through mentoring, training, and job rotation opportunities to replace staff, upon exiting the agency, in key management positions. In this chapter, we present challenges, strategies, and workforce practices related to "Succession Planning." Exhibit 14-1 provides a snapshot of the chapter.

Exhibit 14-1 Snapshot of Chapter 14	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..……........**103** ▪ **Lack of Workforce Planning** ▪ **Lack of Career Path/Succession Planning** **Industry Strategies**………………..**103** ▪ **Implement a Succession Planning Program** ▪ **Establish Diversity Goals** **Workforce Practices**…..………….**104** ▪ **Minnesota DOT Succession Planning for Supervisors and Leadership** ▪ **Pennsylvania DOT Succession Planning for At-Risk Positions**	 Sound succession plans help to ensure stability and organizational success. The process can range from simple career paths to a formal selection process where candidate pools are groomed for certain positions.
	Definition of Succession Planning: Involves identifying and preparing high potential employees through mentoring, training, and job rotation opportunities to replace staff, upon exiting the agency, in key management positions.

Workforce Pipeline Target Area

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Succession Planning

Chapter 14 Target Area

14.1   **Workforce Challenges.** Programs related to "Succession Planning" are typically designed to address challenges associated with ensuring continuity of organizational resources, including developing a plan to replace leaders as they move through the organization and/or retire. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Lack of Workforce Planning. Several organizations indicated that a lack of workforce planning and strategies cause hiring managers to 'do their own thing' and react to job vacancies differently. Forced to fill the position quickly, hiring managers are not able to investigate the applicant as thoroughly as they would like and might end up hiring a candidate who is a bad "fit" with the organization. Some organizations indicated that they do not attempt to predict future needs because their department is limited in the number of positions it is allowed to have. This choice may leave an agency exposed and implement haphazard recruitment techniques when faced with retirements and other sudden vacancies.

Lack of Career Path/Succession Planning. Many participants indicated their organization does not have a way of identifying or preparing high-potential employees for promotions. This is an important problem to solve because high-potential workers tend to capitalize on training they receive, resulting in a greater return on investment for the organization. Furthermore, many organizations do not provide employees with career paths or the steps each employee must take to advance. This lack of planning conveys to the employee that the organization is not concerned with their professional advancement and as a result, they may begin to explore opportunities outside of the organization.

14.2   **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Succession Planning." (See Exhibit 14-2.) While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 14-2	
Industry Strategies: Succession Planning	
Strategy	*Strategy Description*
Implement a Succession Planning Program	Organizations conduct succession planning that ranges from simply creating career paths to a formal selection process where candidate pools are groomed for certain positions. Formal succession programs involve management teams identifying individuals who have shown qualities that indicate the potential for strong leadership and have had excellent performance in their current position. The programs involve training, problem solving activities, assessments, mentoring, and testing that are in addition to the selected employees' normal duties and do not result in additional compensation. Job rotations are also a large part of the succession planning program, allowing the selected employees to see the organization from several vantage points. Once the selected employees have "graduated" from the program, they are considered for management opportunities as the opportunities arise. This not only makes filling management opportunities easier because of the smaller applicant pool, but it keeps high performers engaged and shows that there are opportunities for advancement. It may also motivate mid-level performers to improve their performance to be selected for the program. One important

Exhibit 14-2 (Continued) Industry Strategies: Succession Planning	
Strategy	*Strategy Description*
	factor in building a succession plan is to determine a standard and verifiable way of selecting the high performers. The designation of high potential should be made by more than one supervisor.
Establish Diversity Goals	In order to ensure diversity is upheld within the highest levels of the organization, it is important that agencies are intentional about their plans for including minorities in their succession planning and that top management fully supports those plans.

14.3   **Workforce Practices.** Nine workforce practices that were designed to assist in making the process of "Succession Planning" within transportation agencies efficient and effective were reviewed, and we identified two workforce practices that were the most noteworthy within this context:

- Minnesota DOT Succession Planning for Supervisors and Leadership
- Pennsylvania DOT Succession Planning for At-Risk Positions

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

Minnesota DOT Succession Planning for Supervisors and Leadership. Minnesota Department of Transportation (Mn/DOT) employs 5,033 people in a variety of employment conditions (i.e., temporary, unlimited, full-time, part-time). Slightly more than three-quarters (76%) of the agency's workforce is above the age of 40, while only 8% are 29 years or younger. The majority of Mn/DOT's workforce is Caucasian and male, 93% and 79% respectively. As described on Mn/DOT's website, the agency's mission is to "provide the highest quality, dependable multi-modal transportation system through ingenuity, integrity, alliance, and accountability."

This program is an executive-level process designed to develop and/or externally recruit employees to support targeted leadership positions. The succession planning model consists of a competency-based, developmentally driven executive staffing model to identify a talent pool of successors who can move into crucial positions without unnecessary operational disruptions. The program has directly influenced more than 20 senior executive management appointments.

> *Minnesota DOT Succession Planning for Supervisors and Leadership*
> - **Job Type:** All
> - **ROI:** Long-term
> - **Generation:** Older
> - **Key Program Highlights:**
>   o Executive-level process designed to develop and/or externally recruit employees to support targeted leadership positions
>   o Led to the implementation of programs that supported the succession planning process including job-sharing, job-switching, and classroom training
>   o Helps agency utilize talent in leadership positions and align leadership with the strategic direction of the department

The Minnesota Department of Transportation (Mn/DOT) estimated in the early 1990s that 90% of their engineering workforce and key leadership positions would be eligible for retirement or retired in the next 15-20 years. As a result, in 1994, the agency began to explore a Succession Planning program. The intent was to create a model for identifying essential executive-level positions and then developing internal candidates or recruiting externally to support those positions.   The program ensures that future leadership aligns with the department's strategic goals and objectives and that the department can take advantage of Mn/DOT's talent pool.

As a first step in developing its succession planning model, the Mn/DOT Senior Executive Management Team created a steering committee of senior managers to develop the process. As a result, Mn/DOT identified 37 succession planning positions and the competencies needed to fill them. Mn/DOT also had identified seven core competencies that support the mission, vision, and goals of the department. These seven core competencies guide Mn/DOT HR functions and provide a framework for accountability throughout the department. Most recently the competencies have been reviewed and revised. Position profiles were developed that included the general purpose of the position, education requirements, licensure requirements (if any), and competencies ranked from A to C in terms of the most critical.

Mn/DOT started the implementation process by gathering data such as environmental scanning with the Commissioner and staff and retirement/turnover data, soliciting participants, conducting assessments of people in the process/program, and providing feedback to employees. Mn/DOT used the identified competencies and qualifications to assess each individual's knowledge and experience and determine if the employee would need further development to prepare him/her for the next level. High-potential employees were determined based on a rating of "ready now," "ready in 3 years," and "ready beyond 3 years." This evaluation led the Succession Planning program to put a prime focus on leadership development within the department. Programs that supported the implementation of this succession planning process included job sharing, job switching, and classroom training.

The costs associated with implementing the Succession Planning program have primarily consisted of time and effort. Additionally, there were costs related to lost time because the Succession Planning program involves development time and relocation costs based on job sharing and/or job switching. Mn/DOT also undertook a thorough communications process to inform employees of the Succession Planning program. The agency drafted newsletter articles and utilized meetings to share information with employees. Mn/DOT drafted and administered an interest survey to managers, which assessed their interest in advancement and in becoming participants of the succession planning process. All managers were responsible for supporting the process in some way; they were either directly involved or supportive through encouraging their subordinates to get involved.

Since fully implementing the program in 2003, Mn/DOT has been able to fill most executive-level positions in a timely fashion. Mn/DOT uses the Succession Planning program to determine whether they have a sufficient pipeline of potential leaders and hires for these positions, or if they should look outside the agency (e.g., finance staff). The Succession Planning program also increased the transparency of hiring for high-level positions by communicating the expected qualifications for those positions. Support for the program is dependent on the commitment from the Mn/DOT Commissioner and staff. The significant outputs from the program include a well-rounded performance management process including performance feedback in the organization; leadership development through classroom and on-the-job training; development programs such as job sharing and job switching; ability to utilize Mn/DOT talent in leadership positions; and the ability to align leadership with the strategic direction of the department.

Pennsylvania DOT Succession Planning for At-Risk Positions. The Pennsylvania Department of Transportation (PennDOT) has approximately 12,000 employees, not including consultants or contractors, of which roughly 10,500 are engaged in maintenance, restoration, and expansion of the highway system. The agency is divided into six main divisions, known as deputates, which include highway administration, safety administration, planning, aviation and rail freight, local and area transportation, and administration.

In order to address PennDOT's struggle with retention due to employee retirement, PennDOT implemented a Succession Planning practice. The practice focuses on "at-risk" positions, critical organizational positions that may soon become vacant due to impending retirements, promotions, or transfers. In addition to identifying "at-risk" positions, PennDOT identifies a pool of current employees who are capable of completing the duties associated with the "at-risk" position. Once these candidates are identified, PennDOT may enter them into a mentee/mentor program or job training so they can be prepared for the future roles they may occupy.

PennDOT developed a Retirement Project Report, which they distribute to regional decision-makers, as well as a Workforce and Succession Planning Report Tool to guide decision makers at the district and county level. Additionally, PennDOT created an Organization/Job Class Workforce Planning Worksheet to help district decision makers think about future work requirements, analyze current resources and projects, and develop an organizational action plan to address future vacancies.

> ### *Pennsylvania DOT Succession Planning for At-Risk Positions*
>
> - **Job Type:** All
> - **ROI:** Long-term
> - **Generation:** Older
> - **Key Program Highlights:**
>   - Focuses on "at risk" positions, critical organizational positions that may soon become vacant due to impending retirements, promotions, or transfers
>   - Candidates identified, may enter a mentee/mentor program or job training to be prepare them for the future roles they may occupy
>   - Assessment of the program will be based on whether at-risk positions are identified efficiently and effectively; ability to identify candidates to fill the vacancy; and ability to fill the vacancy swiftly

The Succession Planning program was developed in the central office at Penn DOT and then implemented by PennDOT's HR department. PennDOT's HR department researched best practices in other states, gathered information on related data systems, and collaborated with PennDOT's Workforce Development Division to develop training to prepare employees from the central office to travel to the districts and explain the Succession Planning program to local employees. All costs associated with implementing PennDOT's Succession Planning were internal and required only employee time.

Because Succession Planning has only existed at PennDOT since 2007, PennDOT has not yet formally evaluated the practice. PennDOT anticipates evaluating the practice by considering whether they have identified at-risk positions efficiently and effectively, identified candidates to fill the vacancy, and filled the vacancy swiftly. Regardless of measurable results, PennDOT's leadership almost universally supports Succession Planning as a necessary practice, and the reaction of most PennDOT employees has been positive.

Other Example Practices

To serve as an additional resource for agencies interested in "Succession Planning," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Career Path
- Diversity Succession Planning
- Minority Development Practices
- Staffing Plan Database
- State DOT Succession Planning Programs
- Succession Planning Best Practices
- Workforce Planning Program

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 15: Developing Knowledge Management Systems

Comprehensive knowledge management systems are necessary to capture critical institutional data and are considered one of the key components to an organization's continued success. In this chapter, we present challenges, strategies, and workforce practices related to "Developing Knowledge Management Systems." Exhibit 15-1 provides a snapshot of the chapter.

Exhibit 15-1 Snapshot of Chapter 15	
Chapter Road Map	**Concept and Definition**
Workforce Challenges……….........**110** ▪ **Lack of Knowledge Transfer** ▪ **Fleeting Institutional Knowledge** **Industry Strategies**……………..**110** ▪ **Create People-Focused Knowledge Management Systems** ▪ **Implement Communities of Practice** **Workforce Practices**…..………..**111** ▪ **Virginia DOT Knowledge Management Program**	 Cutting-edge transportation organizations are developing strategies to address the need for capturing institutional knowledge.
	Definition of Developing Knowledge Management Systems: Involves practices that help organizations better manage the sharing and documentation of institutional and job knowledge within transportation organizations.
Workforce Pipeline Target Area	

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Developing Knowledge Management Systems

Chapter 15 Target Area

15.1   **Workforce Challenges.** Programs related to "Developing Knowledge Management Systems" are typically designed to address challenges associated with retaining critical institutional knowledge that is often lost during transitions. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Lack of Knowledge Transfer. Results indicated that organizations are challenged with finding a way to facilitate transfer of knowledge from older workers who are retiring to younger workers. When knowledge transfer does not occur and an employee leaves an organization, the individual filling the position will take longer to become as productive as the original employee due to a learning curve with the process of coming on board. This leaves employers constantly "reinventing the wheel," thus costing valuable resources such as time and money.

Fleeting Institutional Knowledge. Transportation participants indicated that the average age of their employees is around 45. Individuals at the higher end of this spectrum are retiring. Because there is such a large number of potential retirees, organizations are concerned with the amount of institutional knowledge that will be lost from the organization as individuals retire. Organizations are challenged with having an overabundance of unskilled workers and a lack of skilled workers. Participants acknowledged that transportation companies can only support a limited number of unskilled workers as permanent staff. One cause of this issue is the fact that the training required to obtain a skilled position seems to take a significant amount of time to complete. Employees who do not feel they have the time to invest in training in order for advancement to occur also contribute to the retention challenge.

15.2   **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Developing Knowledge Management Systems" (see Exhibit 15-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 15-2 Industry Strategies: Developing Knowledge Management Systems	
Strategy	*Strategy Description*
Create People-Focused Knowledge Management Systems	During the past decade, the focus of knowledge management (KM) initiatives has shifted from a strategy of capturing data and explicit information in portals and databases to a strategy of promoting knowledge sharing among people (Cross et al., 2001; Davenport and Prusak, 1998; Parise, 2007). The main advantage of a people-focused strategy is that it enables the sharing of more relevant inferred knowledge, such as employees' experiences, know-how, and other similar or complementary expertise that cannot be captured in documents (Parise, 2007).
Implement Communities of Practice	Some organizations use "communities of practice," where every individual in the state who performs a unique function or provides a certain service to one local area comes together with other individuals doing the same tasks in other locations in the state. They share ideas, give presentations, solve problems, and develop relationships. They meet in person and online to discuss initiatives and at times influence the direction of policy that directly affects the way they perform their tasks. It is important to keep these meetings structured and well-

<table>
<tr><td colspan="2" align="center">**Exhibit 15-2 (Continued)**
Industry Strategies: Developing Knowledge Management Systems</td></tr>
<tr><td align="center">*Strategy*</td><td align="center">*Strategy Description*</td></tr>
<tr><td></td><td>facilitated. This is different from a department meeting where attendees perform different tasks but work in the same geographic location.</td></tr>
</table>

15.3   **Workforce Practices.** Four workforce practices that were designed to assist in making the process of "Developing Knowledge Management Systems" within transportation agencies efficient and effective were reviewed, and we identified one workforce practice that was the most noteworthy within this context:

- Virginia DOT Knowledge Management Program

For this practice, we conducted a case study. A summary of the case study is presented below. The full case study can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study description details each practice's background, implementation, maintenance, evaluation, and transferability.

Virginia DOT Knowledge Management (KM) Program. The Virginia Department of Transportation (VDOT) has a workforce of roughly 7,600 full-time employees with an average age of 48 years. VDOT established a Knowledge Management (KM) program in 2003. This KM program was in response to significant losses in critical, institutional knowledge during downsizing that occurred at the agency in the early 1990s, and concerns the Commissioner had regarding the larger percentage of the workforce (nearly 30%) that were eligible for retirement within the next 5 years.

The KM program comprises the library and the KM Office. The KM Office is responsible for the tacit knowledge and the library is responsible for explicit knowledge, which includes anything that has been codified. The four primary areas within VDOT's KM program are:

- Process mapping
- Organizational network analysis
- Lessons learned
- Communities of Practice

> ### *Virginia DOT Knowledge Management (KM) Program*
>
> - **Job Type:** All
> - **ROI:** Mid- to Long-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - The most long-standing and well-regarded knowledge management program among DOTs
>   - Costs approximately $700,000 a year to run the program
>   - Helps agency better manage the sharing and documentation of institutional and job knowledge within their organization and prevents the loss of key data as individuals leave the agency

Process mapping is used within the Communities of Practice. VDOT's KM program has developed a standard way of doing process mapping to assess the interactions between the different functional areas. The KM program started the process mapping by working with the maintenance, operations, and environmental areas and developing a standard process map that would result in process and procedure manuals and the knowledge mapping that is behind the processes.

Organizational network analysis is one part of knowledge mapping. VDOT uses UCINet with an interface developed by the University of Virginia. This interface provides a 10- to 15-minute online survey using targeted questions (dependent on what is being examined). The survey gives management a visual map snapshot of what is happening in the organization so that management can identify where the jams are, who is isolated, what are some overloads, what people are linking other networks or are just a single go-to person, and critical knowledge risk areas.

To reduce duplication of effort across the agency, the KM program began working with Communities of Practice to develop one- to two-page-long "lessons learned" documents. Each document succinctly states what the lesson is, gives the context for it, what the resources are that can be used, and the solution. Some of the lessons learned are positive and others refer to actions that did not go well. The "lessons learned" documents are dispersed across the agency via the Intranet and they help to identify new organization-wide processes.

The Communities of Practice are ongoing small groups that work on building those knowledge networks, capturing tacit knowledge, and developing better processes. On a regular basis, the community of practice goes through and discovers if there are trends in processes or procedures that lend themselves to the development of a best practice to be mandated across the organization.

Most of the implementation costs were associated with staff and travel. On the KM side, there are four full-time staff and one part-time employee, and on the library side, there are two full-time employees and one part-time employee. VDOT estimates it costs approximately $700,000 a year to run the program.

While the KM program encourages each division or operating unit to take credit for all KM accomplishments, the KM program does collect return-on-investment (ROI) data that includes the conduct of a baseline assessment that determines how much time processes are currently taking and the cost of those processes and compares that to the costs avoided or minimized due to the KM actions. Several instances of cost savings, noted in the 2008 agency assessment, suggest the KM program has been overwhelmingly successful.
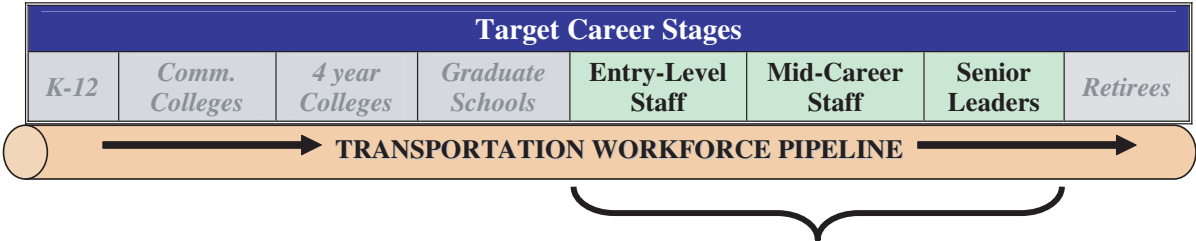
Other Example Practices
To serve as an additional resource for agencies interested in "Developing Knowledge Management Systems," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Environmental Competency Building
- International Visitors Program
- Tapping Retirees to Bridge Skills Gap

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, ROI timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 16: Restructuring Benefits and Compensation

Well-designed benefit packages and organizational policies play a vital role in employee recruitment and retention. In a difficult economy, where salary freezes and even reductions are prevalent, agencies may adopt benefits programs that address some of the needs of employees, yet are more cost efficient than salary increases. In this chapter, we present challenges, strategies, and workforce practices related to "Restructuring Benefits and Compensation." Exhibit 16-1 provides a snapshot of the chapter.

Exhibit 16-1 Snapshot of Chapter 16	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..……........**115** ▪ **Anti-Public Sector Sentiment** ▪ **High Expectations of an Employer** ▪ **Aggressive Wage Competition** ▪ **Better Compensation and Responsibility** **Industry Strategies**………………..**115** ▪ **Research Competitive Compensation** ▪ **Supplement with Alternative Benefits Packages** **Workforce Practices**…..…………...**116** ▪ **Santa Clara Valley Transportation Authority (VTA) Medical Opt-Out Program** ▪ **North Carolina DOT Competency-Based Pay Program**	 The restructuring of benefits and compensation systems enables agencies to remain competitive with other organizations' recruitment and retention practices.
	Definition of Restructuring Benefits and Compensation: Involves adopting benefits programs that address the needs of employees. Often these benefits are more cost efficient than salary increases. As a result, these practices help agencies to better recruit and retain employees.
Workforce Pipeline Target Area	

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Restructuring Benefits and Compensation

Chapter 16 Target Area

114

16.1 **Workforce Challenges.** Programs related to "Restructuring Benefits and Compensation" are typically designed to address challenges associated with attracting and retaining qualified individuals who are likely to leave the organization for a competitor able to offer better benefits. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Anti-Public Sector Sentiment. Some transportation agencies are facing anti-public sector sentiment in their local communities. Although these negative perceptions are not typically grounded by facts, they continue to guide people's decisions about employment in the public sector and are detrimental towards recruitment and retention efforts. As a result, agencies should continue to invalidate these misperceptions and accentuate the notion of public service (i.e., value/meaning of work), and benefits (e.g., job stability, employee leave, retirement packages) associated with a career in the industry.

High Expectations of an Employer. Younger workers tend to differ from older workers in terms of their expectations when it comes to salary, tenure, responsibility, and work schedule. Organizations are challenged with younger workers who attempt to negotiate their salary based on their perceived skill level. Hiring a younger individual at their requested salary could lead to dissension, especially if the offer is discovered by lower-paid incumbents. Organizations must be savvy about where they set their compensation levels and provide justification for doing so. Many younger workers feel that changing jobs around every 5 years is an important part of building their skill set; however, older generations consider 5 years to be a very short tenure with an organization and an indication of poor commitment. Lastly, the younger workforce expects to have flexible schedules. This expectation can be difficult to meet in jobs that work around tight schedules. Organizations are struggling to find ways to alter legacy jobs to meet these expectations.

Aggressive Wage Competition. Organizations struggle to offer a compensation package that rivals the private industry. Almost every participant indicated that their agency loses applicants, especially those needed to fill middle to upper management positions, to the private industry for higher salaries and superior benefits packages. Furthermore, some applicants accept positions with public organizations for their training programs, but once certified, will leave and find work in the private sector where they receive a higher salary. Many organizations have succumbed to this wage competition instead of developing more strategic methods of recruiting workers. Organizations focus on filling unskilled positions without having long-term development plans for these new employees, leaving organizations "bottom-heavy" and forcing them to lay off employees when business slows down. Managers begin to perceive this transient workforce as an industry norm and do not motivate new unskilled employees to enroll in training programs because of the risk of losing those employees once skilled. The issue is that a cycle emerges which results in a lack of skilled workers.

Better Compensation and Responsibility. Participants indicated that employees are often willing to leave their current positions for better compensation and benefits. Specifically, organizations struggle with retaining employees who are in the middle of their careers (e.g., 5 to 10 years) because this is about the time when private sector competitors may begin to offer much more than the public sector can. Participants also suggested that the private sector tends to offer greater responsibilities to new hires because these private sector organizations are not as deeply rooted in seniority-based systems.

16.2 **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in "Restructuring Benefits and Compensation" (see Exhibit 16-2). While these strategies represent the general direction of human resource (HR)

departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 16-2 Industry Strategies: Restructuring Benefits and Compensation	
Strategy	*Strategy Description*
Research Competitive Compensation	Public agencies often find the salary differential between public and private sector jobs to be a significant factor in job decisions. To ensure public sector agencies remain competitive, they should conduct regular assessments to determine whether adjustments need to be made to the baseline as well as to determine the frequency of salary adjustments. Recent research indicates that improving compensation practices such as the structure and timing of wages can increase employee retention (KFH Group, Inc., 2008). Organizations who participated in our benchmarking study indicated that wages are a primary tool for affecting retention. Participants from both public and private organizations used salary surveys to determine how much employees in a particular job are typically paid. Organizations have started using different salary scales in parts of the state where there are a lot of private industry competitors. At times, when market research identifies significant compensation differentials, adjustments can lessen the competitive advantage of private industry. Some organizations are able to offer matching compensation for in-demand skill areas. If a potential candidate can provide evidence that they have been offered a stronger compensation package, the organization may attempt to match the offer.
Supplement with Alternative Benefits Packages	Organizations have begun to supplement their traditional benefits with telecommuting, schedule flexibility, and job autonomy. Employees might see these benefits as a reason to remain with the organization even though they have an opportunity to make more money elsewhere. Some organizations indicated that an effort to redesign their benefits programs helped to retain their younger workers (e.g., school options, technology training, and schedule flexibility). These redesigns include allowing employees to pick the benefits that meet their specific needs (i.e., cafeteria-style benefits). Retirement and development (tuition) benefits were also mentioned by organizations as strong solutions to retention challenges.

16.3 **Workforce Practices.** Fourteen workforce practices that were designed to assist in making the process of "Restructuring Benefits and Compensation" within transportation agencies efficient and effective were reviewed, and we identified two workforce practices that were the most noteworthy within this context:

- Santa Clara Valley Transportation Authority (VTA) Medical Opt-Out Program
- North Carolina DOT Competency-Based Pay Program

For these two practices, we conducted a case study. Summaries of the two case studies are presented below. The full case studies can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx

as part of Volume II: Supplemental Materials. The full case study descriptions detail each practice's background, implementation, maintenance, evaluation, and transferability.

Santa Clara Valley Transportation Authority (VTA) Medical Opt-Out Program. The Santa Clara
Valley Transportation Authority (VTA) employs
roughly 2,100 people, of which 650 work in
maintenance. In addition, VTA is combined with
the Congested Management Agency (CMA), which
adds another 800 employees to the total workforce.

VTA's Opt-Out program has been in existence for
10 years. VTA has a policy that all employees must
have health insurance to be employed. Originally,
employees were required to enroll in VTA's health
insurance. The Opt-Out program was intended to
address a desire by employees to have a choice
when it came to health insurance options and to not
be required to pay for health insurance when they
are already covered by another plan.

VTA's Medical Opt-Out program provides full-time
employees with the opportunity to choose not to
participate in the agency's health insurance program
and receive a taxable monthly payment if they have
other coverage. For example, employees may have
other coverage through their veteran status or
because they are covered under the health insurance
of a family member that works outside of the

> *Santa Clara Valley Transportation
> Authority (VTA) Medical Opt-Out Program*
> - **Job Type:** All
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - Addresses a desire by employees to
>   have a choice when it comes to health
>   insurance options and to not be
>   required to pay for health insurance
>   when they are already covered by
>   another plan
>   - Offering greater flexibility when it
>   comes to health insurance coverage
>   has increased morale and
>   satisfaction among employees
>   - Effective method of addressing high
>   costs while ensuring that all
>   employees have health insurance
>   coverage

agency. The option provides an incentive of 50% of the employer cost meaning that if the employee (1)
has other coverage and (2) chooses to opt out, he/she will be receive the extra money in his/her paycheck.

Around 1998, the HR Manager for VTA developed a written proposal and submitted it to the General
Manager of VTA for evaluation and approval of the Opt-Out program. In the proposal, the manager
included evidence of the program's success at another agency (i.e., BART), the cost savings to
employees, and the potential cost savings for the agency. The manager also highlighted the potential for
increased morale and satisfaction among employees who were given more flexibility when it comes to
health insurance coverage. Once approved, employees were notified by an agency-wide memo explaining
the new Opt-Out program. New employees learn about the program during new hire orientation.
The program has produced the desired results. From anecdotal conversations with employees, VTA has
concluded that all employees are more satisfied that they have an option when it comes to health
insurance and the 5% of employees that use the Opt-Out option because of alternative coverage are even
more satisfied due to their financial incentive. This program is an effective method of addressing high
costs while ensuring that all employees have health insurance coverage. This program is specifically
useful during periods where health insurance costs are increasing.

North Carolina DOT Competency-Based Pay Program. The North Carolina Department of Transportation (NCDOT) employs roughly 13,000 people, of which 7,500 work within the Division of Highways. NCDOT's competency-based pay system was implemented based on an unfunded mandate by the Office of State Personnel (OSP). The OSP was seeking to implement a system that could be used across all state offices. When they realized the skill block system implemented in the late 1990s could not be used across state jobs due to its specificity, the blocks were generalized and broadened into competencies. The five skill blocks were collapsed into three groupings of competencies. The OSP chose to pilot the program first with NCDOT before moving to other state agencies.

For the competency-based pay system, there are three levels within three competency block groups: contributing, journeyman, and advanced. For example, a contributing transportation worker can be a Level 1, Level 2, or Level 3. Employees are granted the competency once they demonstrate proficiency in the competency. Some of the agency's competencies have a specified time frame before the competency is obtained. For example, for a lead worker, the competency blocks require specific training and demonstration of the competency for 6 months prior to the employee being granted the competency block. Competency-based pay for transportation workers is based entirely on function. Competency blocks are set up based on the complexity of the function performed. For the agency's supervisors, there are four different competencies. These competencies include: Planning and Organizing Work, Human Resource Management, Fiscal/Budget, and Technical Competency.

> ### *North Carolina DOT Competency-Based Pay Program*
>
> - **Job Type:** All
> - **ROI:** Short- to Mid-term
> - **Generation:** All
> - **Key Program Highlights:**
>   - Applies to transportation workers, supervisors, engineers, technicians, and the information technology group
>   - Competency blocks were developed based on the initial skill block system in order to be used across state jobs
>   - Due to a lack of funding, competency blocks are only used for personal career development

NCDOT wanted to have a less subjective rating scale for the competencies than the "never," "sometimes," "always" convention so the agency conducted focus groups with workers and identified work examples that helped to define each of the competency blocks and make the process of assessment both more flexible and more refined. While the time required to develop these work examples cost the agency money, NCDOT has not specifically tracked the cost of the program.

One of the challenges with the success of the program is that no funding has been provided to allow NCDOT to compensate employees who have achieved specific competency blocks. Thus, at this time, the competency blocks are simply used for personal career development and not used to make administrative decisions. At this time, the program only applies to transportation workers, supervisors, engineers, technicians, and the information technology group. The agency is still working through their accounting and clerical classifications. The ultimate goal is to have all the jobs and all of the state government positions switched to competency-based pay.

Other Example Practices

To serve as an additional resource for agencies interested in "Restructuring Benefits and Compensation," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Application of Malcolm Baldrige National Quality Award Criteria
- APTA Solutions for Workforce Challenges Digest
- Compensation and Benefits Packages
- Florida DOT Deferred Retirement Option Program
- HealthQuest State of Kansas Health and Wellness Program
- Incentive Premiums
- Job Benchmarking
- Performance Evaluations and Individualized Training Plans
- Salary Survey
- Telework
- Santa Clara Valley Transportation Authority Complete Compensation
- Workforce Development for the U.S. Freight Railroad

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

Chapter 17: Work-Life Balance

Workers of today are becoming more interested in maintaining a healthy work-life balance and reducing conflict associated with juggling multiple demands. In fact, more and more employees value work-life balance over higher salaries. In this chapter, we present challenges, strategies, and workforce practices related to "Work-Life Balance." Exhibit 17-1 provides a snapshot of the chapter.

Exhibit 17-1 Snapshot of Chapter 17	
Chapter Road Map	**Concept and Definition**
Workforce Challenges…..……........**122** ▪ **Different Career Decision Making** ▪ **Competing on Benefits** ▪ **Impact of Children** **Industry Strategies**……………….**122** ▪ **Improve Existing Work Schedule** ▪ **Allow Flexible Schedules and Days Off** ▪ **Establish a Breadth of Policies to Support Different Employee Needs** ▪ **Allow Telework for High Performers** **Workforce Practices**…..………….....**124** ▪ **Federal Highway Administration (FHWA) Alternative Duty Location**	 Successful work-life balance helps employees effectively focus on their work since they are not distracted by competing demands.
	Definition of Work-Life Balance: Involves consideration of creative job arrangements and policies that support employee desires to maintain a healthy work-life balance. The goal of these efforts is to help make organizations more attractive to candidates and encourage retention.
Workforce Pipeline Target Area	

Target Career Stages							
K-12	*Comm. Colleges*	*4 year Colleges*	*Graduate Schools*	**Entry-Level Staff**	**Mid-Career Staff**	**Senior Leaders**	*Retirees*

TRANSPORTATION WORKFORCE PIPELINE

Work-Life Balance

Chapter 17 Target Area

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17.1   **Workforce Challenges.** Programs related to "Work-Life Balance" are typically designed to address challenges associated with assisting employees in maintaining their work and personal responsibilities. These challenges should be carefully considered before selecting the program that would best fit the needs of your agency. For example, these are common challenges agencies face:

Different Career Decision Making. In terms of careers, younger generations are tending to lean toward "engineering" more than "surveying" majors in college because engineering jobs pay more and are more appealing, as they offer a variety of concentrations. As a result, organizations are challenged with promoting transportation surveying as a viable and important career.

In terms of organizational culture, younger generations are more interested in organizations that support work-life balance and educational opportunities than stability and benefits. Organizations struggle to find ways of implementing these preferable elements into traditional transportation jobs. Younger generations are also attracted to companies that emphasize giving back to the community and having a commitment to ethical practices. Organizations struggle to find ways of engaging in community activities in limited time.

Competing on Benefits. Some partners indicated that their competitors use work-life balance benefits (e.g., days off, flexible schedules) to retain employees who have the option of leaving for higher salaries.

Impact of Children. Slightly less than one-half of the survey participants in a study for Florida DOT identified people who are "married, with children" to be most difficult to recruit (Cronin et al., 2007). On the other hand, people who are "married with no children" were identified as the easiest to recruit with less than 10 percent of the participants selecting this group as "difficult to attract."

17.2   **Industry Strategies.** Researchers and program managers identify the following programmatic strategies when describing industry efforts in creating a positive "Work-Life Balance" (see Exhibit 17-2). While these strategies represent the general direction of human resource (HR) departments across the nation, it is important that the specific needs of your agency are used to guide the development and implementation of a program in your agency.

Exhibit 17-2 Industry Strategies: Work-Life Balance	
Strategy	*Strategy Description*
Improve Existing Work Schedule	Organizations have received feedback that one of the reasons employees choose to stay employed with them is that they are not expected to work more than 40 hours in a week and that they can expect to work approximately 8 hours in a day if working 5 days a week. Employees are looking for a work environment that does not infringe upon their life outside of work—an environment that allows them to make plans outside of work and a schedule that helps them feel confident their personal plans will not have to be adjusted. One way they are doing this is by studying work distribution and work schedules. After determining how work is ultimately distributed and how schedules are designed, the organizations have implemented policies to ensure that one employee is not receiving more work or a more challenging schedule than other employees at similar levels. If this is occurring due to the nature of the job, organizations are looking at ways to ensure that stressful work environments are temporary and those duties are rotated among all team members. Work distribution and scheduling are typically evaluated quarterly.

Exhibit 17-2 (Continued) Industry Strategies: Work-Life Balance	
Strategy	*Strategy Description*
Allow Flexible Schedules and Days Off	Organizations have looked at the positions and related tasks in their workforce and considered which of the positions do not require an individual to be at a certain station at a specific time. For example, employees who are gathering information from the internet and preparing weekly reports do not necessarily have to perform this duty between 9AM and 5PM. Not being confined by a set schedule allows employees to conduct non-work-related business and solve non-work-related problems (e.g. children, laundry, home repair, financial transactions) that are difficult to solve after 5PM on weekdays or on the weekends. Some organizations are offering flexible extra days off during periods of low productivity. For example, if an organization is aware that business will be slower over the next month they may allow their employees to choose 5 days during which they would like to take leave. These days off do not count against their vacation. Other organizations have introduced flexibility into certain positions through job sharing. Job sharing is a situation where two people are responsible for the equivalent work of one employee and are generally each paid one-half the normal salary. Jobs that tend to require physically demanding work and jobs in which tasks can be more easily distinguished may be the ideal jobs for job sharing. This is a great solution for two employees simultaneously pursuing an education as well as caregivers who want to divide their time between work and personal commitments.
Establish a Breadth of Policies to Support Different Employee Needs	Innovative policies that do not meet the needs of employees may be futile. Organizations must ensure their work-life policies cover a range of employee needs and interests. The conduct of a thorough needs assessment ensures that policies are aligned to the employees' needs and that dollars are not wasted on creating innovative yet ineffective practices.
Allow Telework for High Performers	Organizations have looked at positions and related tasks in their workforce and considered which of the positions do not require an individual to be physically present at work. For example, employees that are making phone calls regularly may not necessarily have to be physically present at the office. Even if they have questions, the employee can simply email their questions and have them answered without much delay. Employees who live further away from their employer and find their commute consumes much of their personal time or who are forced to move for a non-work-related reason may be retained if they are permitted to work from home 1 to 5 days a week. Telework benefits are usually reserved for high performing employees as determined by their supervisor.

17.3   **Workforce Practices.** Four workforce practices that were designed to assist in making the process of creating a positive "Work-Life Balance" within transportation agencies efficient and effective were reviewed, and we identified one workforce practice that was noteworthy within this context:

- Federal Highway Administration (FHWA) Alternative Duty Location

For this practice, we conducted a case study. A summary of the case study is presented below. The full case study can be found on the TRB website at http://trb.org/Main/Blurbs/164747.aspx as part of Volume II: Supplemental Materials. The full case study description details each practice's background, implementation, maintenance, evaluation, and transferability.

Federal Highway Administration (FHWA) Alternative Duty Location. The Federal Highway Administration (FHWA) has approximately 2,900 employees in its workforce, the majority of which are between 40 and 50 years of age. FHWA's Alternative Duty Location (ADL) program was designed in 2007, piloted in 2008/2009, evaluated in late 2009 and adopted as a full program in April 2010. For several years, the FHWA had struggled with resource allocation issues. The depth of the candidate pool for vacancy announcements was very shallow. One of the specific resource allocation issues was that the FHWA had technical and policy positions in Washington, D.C., that remained vacant due to a lack of qualified applicants applying for those positions. FHWA struggled to convince qualified candidates to relocate to Washington, D.C., because this was a condition of accepting the position. The results of an employee survey confirmed that one of the reasons employees were leaving the agency is because they felt they could not advance without moving to Washington, D.C. Adding to the challenge of relocation was the continual spiral of the economy and the difficulty with selling a home that may have been purchased in a higher economic market. This issue, the number of positions left vacant, and the duration of time positions were vacant was used to support the idea of strategically addressing resource allocation issues. At the conclusion of the study, the FHWA executive management team met and decided to pilot the ADL concept.

> ### Federal Highway Administration (FHWA) Alternative Duty Location
> - **Job Type:** Professional
> - **ROI:** Short-term
> - **Generation:** All
> - **Key Program Highlights:**
>   o Allows managers greater flexibility when advertising positions to obtain a deeper candidate pool while also benefiting the applicant who may not be able to move to Washington, D.C., to operate out of offices in locations that have a low cost of living while working with teams and supervisors that operate out of offices in locations that may have a higher cost of living
>   o Aimed to increase the number of qualified applicants who apply to positions in high cost of living areas
>   o Resulted in the ability to quickly fill vacant positions, greater opportunity for advancement, higher retention rates, increased exposure to issues and policy at a national level

The Alternative Duty Location (ADL) program is an initiative of the FHWA where employees operate out of offices located where there is a lower cost of living, while working with teams and supervisors that operate out of offices in locations that may have a higher cost of living, particularly Washington, D.C. The HR department and the Information Management Services department researched existing offices to determine their feasibility as an alternative duty location. To date, 26 locations have been identified as "cost desirable" and approved as ADL.

As part of the implementation of the ADL program in April 2010, the FHWA established an ADL Coordinator position to develop, manage, track, and educate the managers on the use of the ADL program. Annually, each FHWA program office will be required to look at their potential future job vacancies and assess if they should be advertised as ADLs. The manager then works with the ADL Coordinator and HR to advertise the position in one of the approved ADL locations. Once hired, the new employee performs his/her daily tasks just as if he/she were in the office with the exception of daily face-to-face contact. The major objective of this program is to increase the number of qualified applicants that apply to positions in high cost of living areas. As of July 2010, there were 38 ADL employees in the program. The majority of these are HQ employees that would have otherwise been located in Washington, D.C.

Vacant positions are now being filled shortly after they are advertised. Employees have suggested that they are less likely to leave the agency because there is no longer a lack of opportunity to advance without

relocation to a higher-cost area. Employees may still be required to relocate but just not into Washington, D.C. Employees in field offices are becoming exposed to issues and policy at a national level that they would not have been exposed to before. Non-ADL employees can use ADL employees in their office as a resource to gain a more national perspective on FHWA or on the initiatives at headquarters   The ADL program has proven to be a win/win for both the agency and the employees.

Other Example Practices

To serve as an additional resource for agencies interested in "Work-Life Balance," we have included a list of other practices that transportation agencies have implemented for this purpose. Additional information on each of the following practices can be found in one- to two-page summaries within the supplemental materials.

- Google's Recruiting Culture
- Instituting Worker-Friendly Personnel Policies
- Job Sharing

The practice summaries include information, such as the lead organization, practice description, practice purpose, targeted participants, return on investment (ROI) timeline, influence of the economy, innovativeness, and resources to find out more information on the individual practices.

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Abbreviations and acronyms used without definitions in TRB publications:

AAAE	American Association of Airport Executives
AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACI–NA	Airports Council International–North America
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	Air Transport Association
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HMCRP	Hazardous Materials Cooperative Research Program
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NASAO	National Association of State Aviation Officials
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PHMSA	Pipeline and Hazardous Materials Safety Administration
RITA	Research and Innovative Technology Administration
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation