



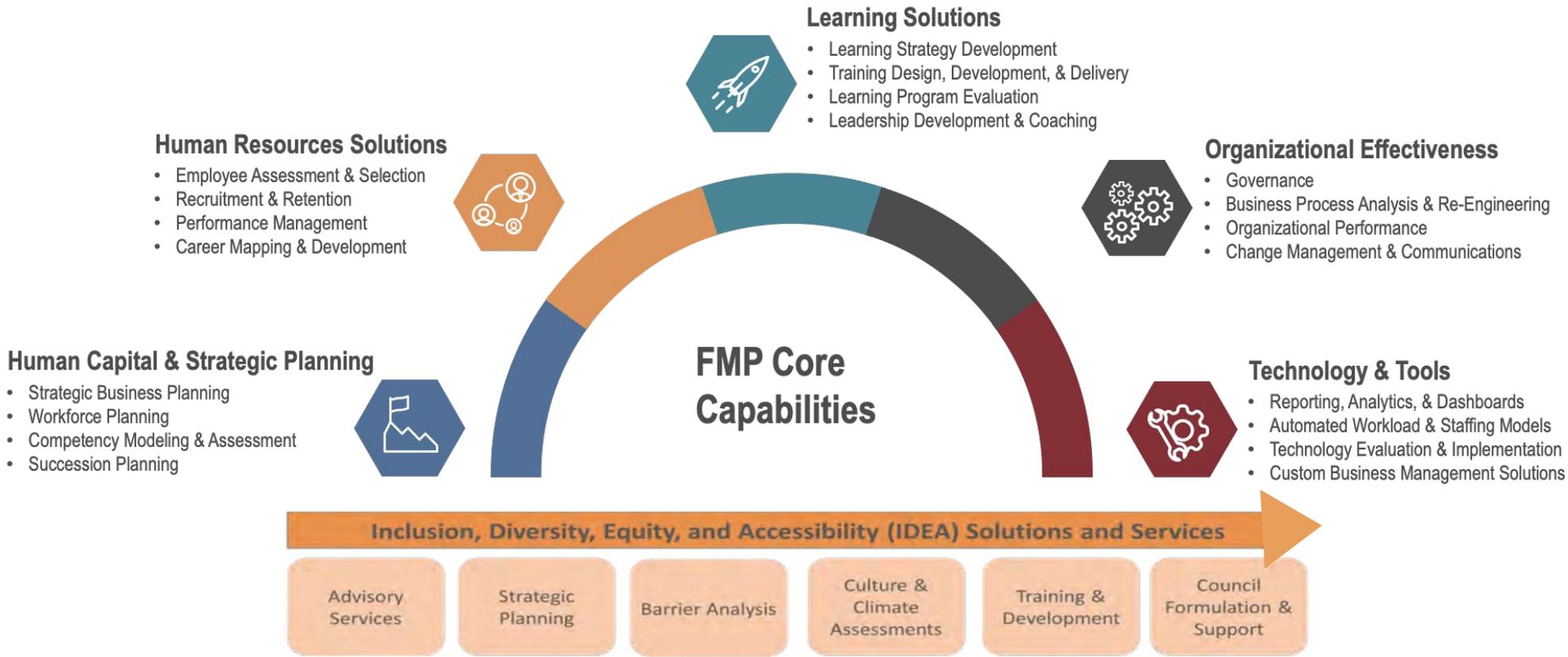
# TRB Executive Committee Policy Session Briefing

## Topic: Workforce Issues and Solutions

Presenter: Candace Blair Cronin, Ph.D.



# FMP Consulting Over 30 Years of Service



# Current Workforce Challenges for Transportation Industry

Research across TRB studies (e.g., ACRP; NCHRP; TCRP) and web searches suggest these major workforce challenges.

- NCHRP 20-81 (2011). Guide to Implementing Strategies to Attract and Retain a Capable Transportation Workforce, report 685.
- TCRP F-16A (2013). Building a Sustainable Workforce in the Public Transportation Industry—A Systems Approach, report 162.
- ACRP 06-04 (2017). Identifying and Evaluating Airport Workforce Requirements, web only report 28 and guidebook report 186.
- NCHRP 02-25 (2022). Workforce 2030--Attracting, Retaining, and Developing the Transportation Workforce: Design, Construction, and Maintenance, report 1008.
- ACRP 11-02, Task 40 (2022). Primer for Airport Organizational Redesign. Research Report 240.



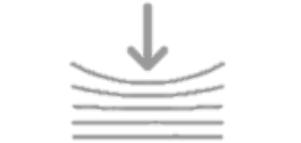
Rapid changes in technologies



Economic challenges



Rise of multi-modal transportation



Resiliency planning



Identify issues: Blue-collar stigma



Antiquated hiring practices



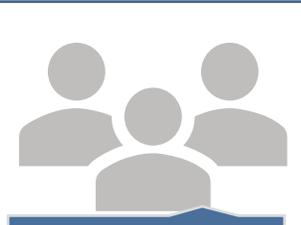
Expectation of flexible workplace policies



Difficulty recruiting and retaining diverse staff



Lack of clear career pathways



Downsizing of staff; Reliance on contractors



Push toward 4 year colleges



High levels of job burnout

# Where Do We Go from Here: Questions to Ask Ourselves...



## Tier 1 Questions:

What is your strategy? 3-5 years out? How realistic is it relative to industry demands?  
What is your mission? Are jobs and their requirements well defined?  
How is your organization designed? Is this the most operationally effective design?



## Tier 2 Questions:

What are the mission critical occupations (MCOs)?  
Is there a succession plan 2-3 levels deep for these MCOs?  
How strong is your talent pipeline?

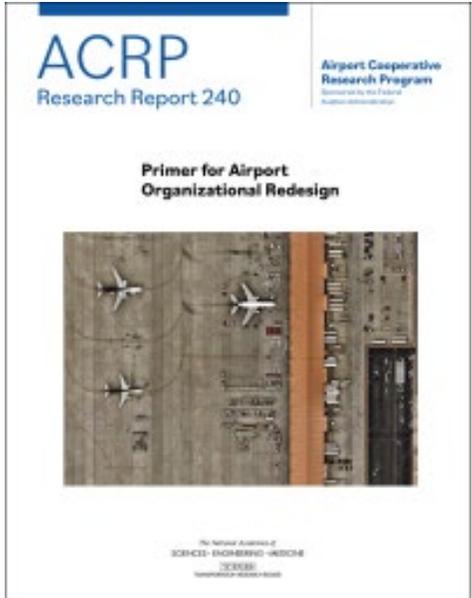


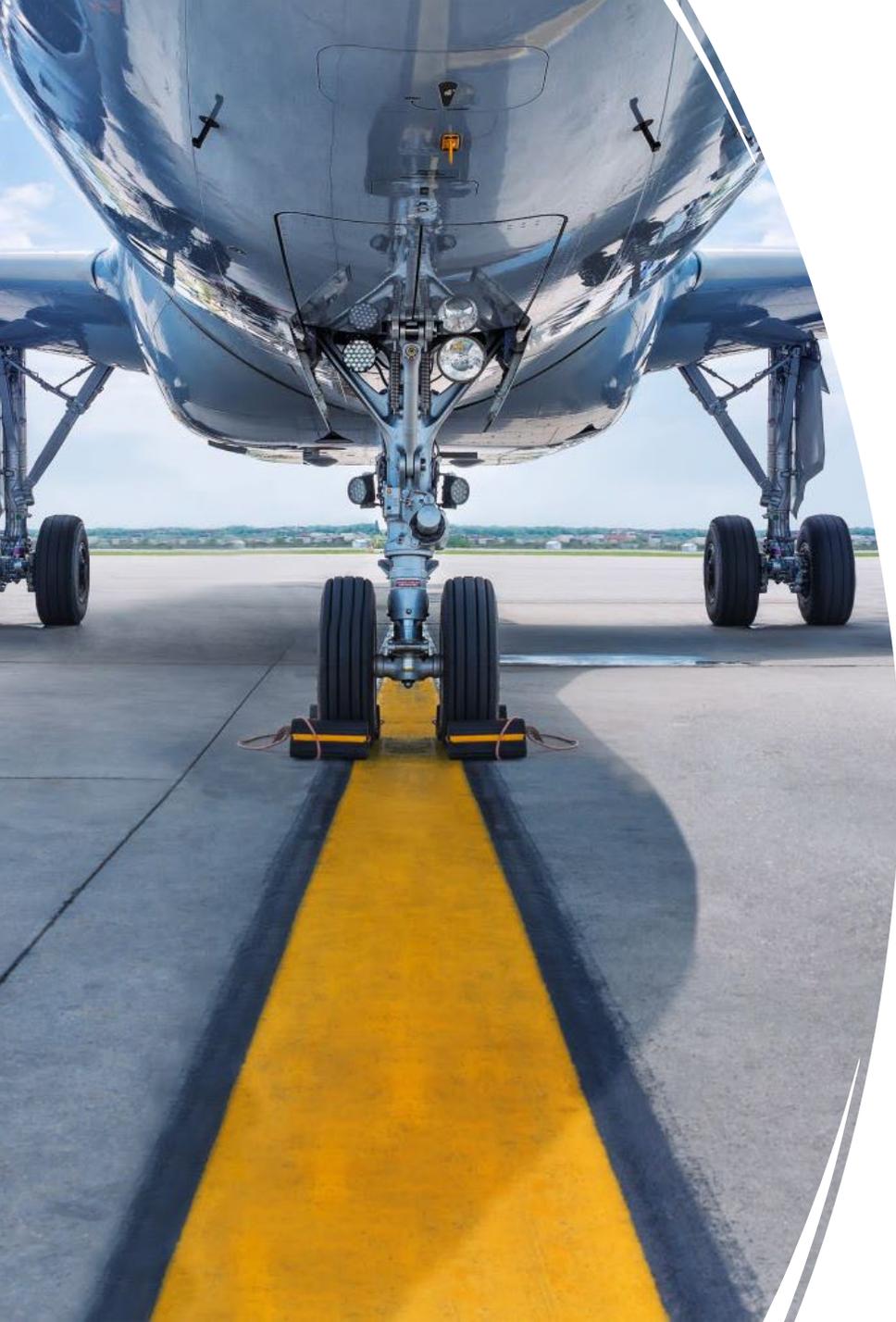
## Tier 3 Questions:

How well equipped is your current workforce? Competency gaps?  
What practices/programs do you have in place to engage and sustain your workforce?  
How well equipped is your leadership to support your workforce?  
Are you going to make improvements? How will you make these changes?

# Tier 1 Solutions: Strategy & Design

Strategy	Recommendation 1: Ensure Strategy Drives Structure
Process	Recommendation 2: Process Mapping for Organizational Restructuring
Metrics	Recommendation 3: Create Metrics or Key Performance Indicators to Measure Success at Each Phase of Redesign
Performance	Recommendation 4: Align Performance Management to Organizational Redesign Objectives
Engagement	Recommendation 5: Engage Employees in the Redesign Process
Functions	Recommendation 6: Prioritize Defining Core Functions Before Determining Staffing Strategy
Risks	Recommendation 7: Identify Risks in Advance of Airport Redesign
DEIA	Recommendation 8: Align Organizational Redesign Process with Diversity, Equity, and Inclusion Initiatives





## Tier 2 Solutions: Mission Critical Jobs (Airports)

- Airport Development Occupations .
- Airport Operations Occupations
- Airport Security Occupations
- Airport Electricians
- Airport Engineers
- Airport Financial Analysis and Planning Occupations
- Airport IT Occupations
- Airport Project Planning Occupations

**ACRP 06-04,  
Web Only Report 28;  
Guidebook Report 186**

### **Mission Critical Executive-Level Positions:**

- Airport Operations and Maintenance Executive-Level Positions
- Airport External Affairs/Government Relations Executive-Level Positions
- Airport Finance and Asset Management Executive-Level Positions
- Airport Information Technology (IT) Executive-Level Positions
- Airport Marketing and Public Relations Executive-Level Positions

NCHRP 02-25  
Workforce  
2030,  
Guidebook  
Report 1008



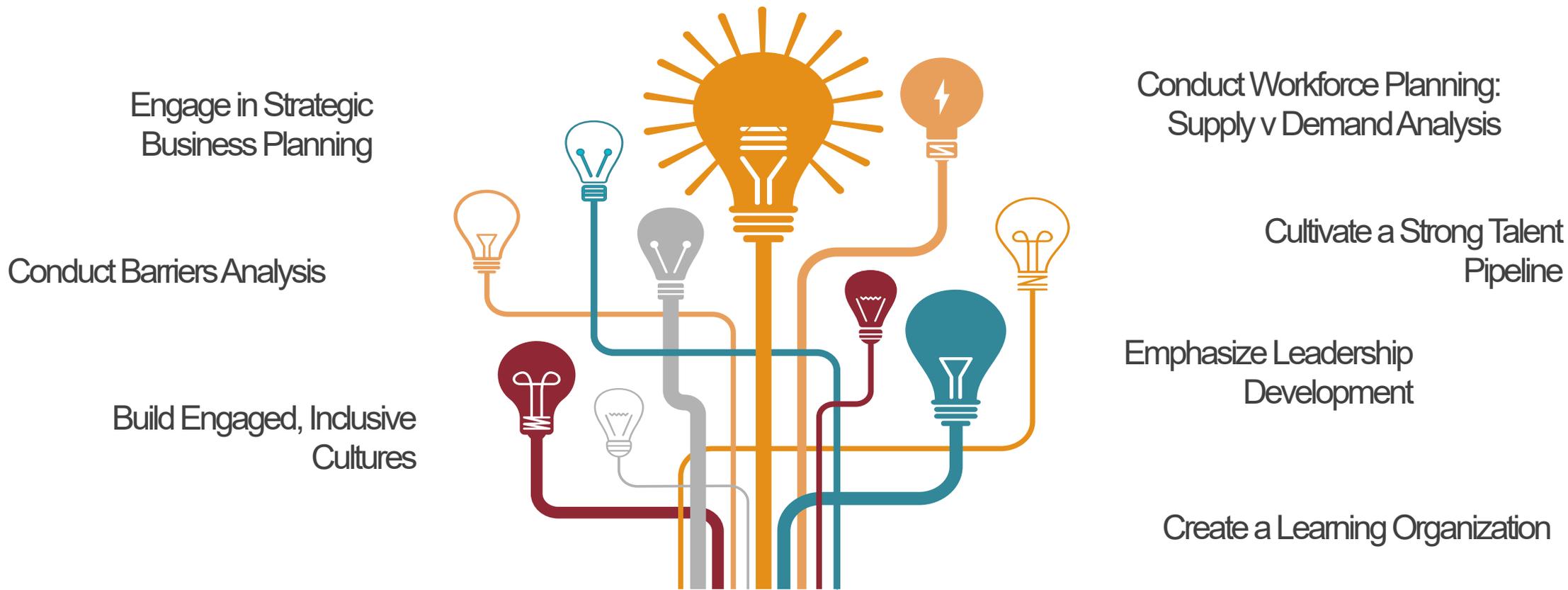
## Tier 2 Solutions: Mission Critical Jobs (Highways)

Exhibit 3: Transportation Design, Construction, and Maintenance Priority Jobs

Design	<ul style="list-style-type: none"><li>• Bridge and Structural Designer</li><li>• Civil Engineer</li><li>• Transportation Engineer</li><li>• Transportation Planner</li><li>• Traffic Engineer</li></ul>
Construction	<ul style="list-style-type: none"><li>• Civil Engineer</li><li>• Construction Manager</li><li>• Transportation Construction Inspector</li><li>• Transportation Technician</li><li>• Traffic Management Operator</li></ul>
Maintenance	<ul style="list-style-type: none"><li>• Highway Foreman</li><li>• Highway Maintenance Technician</li><li>• Civil Engineer</li><li>• Snowplow Operator</li><li>• Transportation Maintenance Specialist</li></ul>



## Tier 3 Solutions: Take a Systems Perspective





# Tier 3 Solutions: Strategies & Tools for Building a Qualified Workforce



Strategy	Available Tools
Partner with Educational Institutions to Market Jobs	<ul style="list-style-type: none"><li>• Example DOT and Educational Institution Partnership Education Plan</li></ul>
Develop a Brand to Attract New Applicants	<ul style="list-style-type: none"><li>• Employer Branding Discussion Guide</li><li>• Mission and Vision Worksheet</li><li>• Ideal Candidate Persona Worksheet</li></ul>
Use a Focused Social Media Presence to Engage Applicants	<ul style="list-style-type: none"><li>• Example Social Media Calendar</li><li>• Best Practices for Using Social Media</li></ul>
Adopt Equitable Recruitment Practices to Hire Underrepresented Individuals	<ul style="list-style-type: none"><li>• Recruitment Strategy Elements to Increase Diversity</li><li>• Example Survey Items for DOT Diversity Climate Survey</li></ul>
Assess Workforce Policies to Ensure Support for Diversity and Inclusion	<ul style="list-style-type: none"><li>• ICF Barrier Analysis White Paper</li><li>• Business Case for Diversity with Supporting Research</li></ul>
Create and/or Revise Job Descriptions to Accurately Market Jobs	<ul style="list-style-type: none"><li>• Guide for Accessing and Navigating O*Net</li><li>• Form for Gathering Job-Related Information</li><li>• Template for a Comprehensive Job Posting</li></ul>



# Tier 3 Solutions: Strategies & Tools for Building a Qualified Workforce



Strategy	Available Tools
Develop Performance Management Strategies with Industry Partners to Communicate Expectations	<ul style="list-style-type: none"><li>• Worksheet to help DOTs Obtain Performance Management Information</li><li>• Checklist for Developing a Performance Management Strategy</li></ul>
Construct Effective Teams to Maximize Staff Productivity	<ul style="list-style-type: none"><li>• Questionnaire to Reflect on Team Context</li><li>• Questionnaire to Examine Team Dynamics</li></ul>
Enable Employees to Foster Innovation	<ul style="list-style-type: none"><li>• Risk/reward Assessment Guide</li></ul>
Integrate Critical Skills into Career Paths to Demonstrate Advancement Opportunities	<ul style="list-style-type: none"><li>• Individual Development Plan Template</li></ul>
Establish SOPs for Data Management to Ensure Efficient and Secure Access	<ul style="list-style-type: none"><li>• Assessing Shared Content and Data with the ROT Framework</li><li>• Evaluating Information with The C.R.A.A.P. Test</li></ul>
Create Flexible Work Arrangements to Accommodate Employee Needs	<ul style="list-style-type: none"><li>• Example Flexible Work Arrangement Survey</li><li>• Guidelines to Support a More Flexible Workforce</li></ul>
Implement Diversity and Inclusion Training to Ensure a Healthy Work Environment	<ul style="list-style-type: none"><li>• Example Survey Items to Measure Reactions and Changes</li><li>• Graphic to Help DOTs Choose Form of D&amp;I Training</li></ul>



# Tier 3 Solutions: Strategies & Tools for Building a Qualified Workforce



Strategy	Available Tools
Partner with Local Institutions	<ul style="list-style-type: none"><li>• Worksheet to Develop Goals and Intentions</li></ul>
Develop Robust Training Programs to Bridge Workforce Skill Gaps	<ul style="list-style-type: none"><li>• Skill Gap Analysis Toolkit</li><li>• Example Survey Items to Measure Trainees' Perceptions</li></ul>
Upskill Employees to Prepare Them for New Roles	<ul style="list-style-type: none"><li>• Reskilling and Upskilling Action Plan Template</li></ul>
Partner with Mobility Service Providers	<ul style="list-style-type: none"><li>• DOT Talking Points for Mobility Service Providers</li></ul>
Implement Internal Knowledge-Sharing Forums to Improve Knowledge Transfer	<ul style="list-style-type: none"><li>• Survey Items to Assess Employees' Areas of Interests</li><li>• Knowledge-Sharing Forum Development Checklist</li></ul>
Conduct Cross-Functional Action Learning Projects	<ul style="list-style-type: none"><li>• Overview of Action Learning Projects</li></ul>
Create a Resiliency Planning Information Repository	<ul style="list-style-type: none"><li>• Post-repository Items on Effectiveness of Repository</li></ul>
Provide Leadership Development Opportunities to Build a Leader Pipeline	<ul style="list-style-type: none"><li>• Overview of Leadership Development Approaches</li><li>• Matrix for Identifying High Potential Employees</li></ul>
Establish a Reciprocal Mentoring Program to Encourage Internal Knowledge Transfer	<ul style="list-style-type: none"><li>• Reciprocal Mentoring Toolkit</li><li>• Mentorship Matching Form and Tips for Pairing Employees</li></ul>



# Tier 3 Solutions: Initiate Partnerships

Organization	Description
The U.S. Department of Transportation (DOT)	The mission of the U.S. DOT is to ensure our nation has the safest, most efficient, and most modern transportation system in the world, which improves the quality of life for all American people and communities, from rural to urban, and increases the productivity and competitiveness of American workers and businesses. This government agency oversees the Federal Highway Administration and ensures its policies and programs are aligned.
Federal Highway Administration (FHWA)	The FHWA sees its role as one of providing national leadership, coordination, and assistance that support initiatives to develop and expand the professional capacity of the nation's transportation workforce. From middle school education through ongoing professional development, the FHWA provides program support, technical assistance, and workforce development activities in partnership with federal, state, and local partners, industry organizations, schools, colleges and universities, and other education providers. FHWA's workforce development programs seek to build awareness and interest in transportation career options; promote an understanding of how they positively impact our mobility, safety, and economic opportunity; and encourage professionals to take next steps in their careers through skills acquisition and enhancement. Many programs emphasize reaching women, minorities, and other disadvantaged groups.
Center for Transportation Workforce Development	The Center for Transportation Workforce Development, an arm of FHWA's Office of Innovative Program Delivery, leads initiatives seeking to enhance workforce sectors and disciplines. This organization supports five Regional Transportation Workforce Centers that facilitate partnerships between state DOTs and other industry stakeholder groups.
Transportation Research Board (TRB)	TRB promotes innovation and progress in transportation through research. TRB facilitates sharing information on transportation practice and policy by researchers and practitioners, stimulates research, offers research management services that promote technical excellence, provides expert advice on transportation policy and programs, disseminates research results broadly, and encourages their implementation.
National Cooperative Highway Research Program (NCHRP)	NCHRP is the program of TRB focused on sponsoring systematic, well-designed, and implementable research for the benefit of state departments of transportation administrators and staff. While NCHRP research is driven by challenges and opportunities at the state level, it is also tied to the national goals and aspirations of FHWA and the U.S. DOT.
The American Association of State Highway Transportation Officials (AASHTO)	AASHTO is a nonprofit, nonpartisan association representing highway and transportation departments in the 50 states, the District of Columbia, and Puerto Rico. Its primary goal is to foster the development, operation, and maintenance of an integrated national transportation system. AASHTO serves as a liaison between state departments of transportation and the federal government. AASHTO is an international leader in setting technical standards for all phases of highway system development.

Organization	Description
National Highway Institute (NHI)	NHI is the training and workforce education division of FHWA. This organization is committed to providing transportation professionals with high-quality training opportunities supplemented with adult learning research, and using a variety of delivery methods (in person distance learning, blended). NHI is recognized as an accredited training provider by the International Association of Continuing Education and Training.
National Transportation Training Directors (NTTD)	NTTD is a professional association of training and education professionals in the transportation industry. NTTD is a collaborative organization that improves the development and delivery of transportation training by sharing information, materials, delivery methods, contacts, and experiences.
Institute of Transportation Engineers (ITE)	ITE is an international membership organization made up of transportation professionals including but not limited to transportation engineers, transportation planners, consultants, educators, technologists, and researchers. This professional association champions professional development through the sharing of educational resources, research, and recommended practices.
American Road & Transportation Builders Association (ARTBA)	ARTBA is a transportation advocacy organization focused on growing and protecting transportation infrastructure investment to meet the public and business demand for safe and efficient travel. This membership organization has members from all sectors of the design and construction industry and offers networking and business development opportunities, training, news, research, and more.
National Association of County Engineers (NACE)	NACE is a professional membership association that strives to improve the transportation engineering profession at the county level through productive collaboration with industry stakeholders, the exchange of information and best practices, and legislative advocacy.
Women in Transportation International (WTS)	The mission of WTS International is to attract, sustain, connect, and advance women's careers to strengthen the transportation industry as a whole. WTS offers its members mentoring and networking opportunities, scholarships, awards, and a variety of training and education programs and resources.
Transportation Diversity Council (TDC)	TDC is committed to providing world-class educational and development programs that promote diversity in the transportation and construction industries. TDC works toward this goal by engaging students of all ages and bridging the gap between these potential new employees and transportation professionals.
Conference of Minority Transportation Officials (COMTO)	COMTO is focused on ensuring opportunities exist in the transportation industry for minority individuals, veterans, and people with disabilities. COMTO accomplishes its mission by providing professional development activities, scholarships and internship funding, leadership training, and by engaging in political advocacy.
Garrett A. Morgan Technology and Transportation Education Program (GAMTTEP)	Administered by the FHWA, GAMTTEP develops and delivers K through 12 transportation-related curriculum and education enrichment programs with an emphasis on women and underrepresented groups.

Organization	Description
National Summer Transportation Institute (NSTI)	NSTI, which falls under FHWA, is a program that focuses on science, technology, engineering, and mathematics (STEM), and exposes middle and high school students to transportation career opportunities, and encourages them to pursue transportation-related courses of study at the college and university level. ASCE student chapters provide volunteer opportunities, leadership resources, mentoring, student chapter meetings, scholarships, contests, and competitions for students interested in the civil engineering profession. This chapter helps civil engineering and civil engineering technology students learn more about the industry and expand their network.
American Society of Civil Engineers (ASCE) Student Chapters	ASCE is the professional association of construction educators and industry practitioners working together for the development and advancement of construction education. There are ASC student chapters at 143 four-year colleges and nine 2-year colleges, and these student chapters host regional competitions.
Associated Schools of Construction (ASC)	CMAA is a nonprofit, professional association that serves the construction management industry. CMAA's local chapters offer opportunities for students to learn about construction projects in their community, network with members, and receive scholarship funding.
Construction Management Association of America (CMAA)	ATSSA is an international trade association that represents the road safety, traffic safety, and highway safety industry. ATSSA provides legislative advocacy, traffic control safety training, and a far-reaching member partnership. ATSSA offers a variety of experiential learning, training, and networking opportunities through its annual convention and traffic expo, mid-year meetings, and National Work Zone Awareness Week.
American Traffic Safety Services Association (ATSSA)	LTAP supports local and rural road agencies across the United States by providing training, technical assistance, and technology transfer services to help them manage and maintain their roadway systems. The program is a limited to a local agency workforce challenged by limited access to training and technical assistance resources.
Local Technical Assistance Program (LTAP)	TTAP builds professional capacity within the federally recognized Tribes to support the management of their transportation assets.
Tribal Technical Assistance Program (TTAP)	APBP is an association that brings together practitioners that want to make places more walkable and bikeable. APBP provides webinars, resources, scholarships, and a mentorship program to foster knowledge sharing and professional development of its members.
Association of Pedestrian and Bicycle Professionals (APBP)	AMPO is an association dedicated to improving transportation in metropolitan regions across the United States. AMPO hosts an annual conference and symposium and shares publications and surveys with its members.
Association of Metropolitan Planning Organizations (AMPO)	NOCoE is a center that strives to provide resources and improve the transportation system management and operations community. NOCoE has an Operations Technical Services Program that encourages knowledge sharing and learning in the community and a web portal that contains resources and discussion forums.
National Operations Center of Excellence (NOCoE)	

Organization	Description
Dwight David Eisenhower Transportation Fellowship Program (DDETFP)	The DDETFP provides fellowships to students pursuing post-secondary degrees in transportation-related disciplines, encouraging future transportation professionals to seek advanced degrees, and helping to retain top talent in the U.S. transportation industry.
Intelligent Transportation Society of America (ITS America)	ITS America is an advocacy group dedicated to advancing research and deploying intelligent transportation technologies. ITS America offers membership to students through student chapters at institutes of higher education and provides focused learning and networking opportunities for students considering Intelligent Transportation Systems careers.
International Municipal Signal Association (IMSA)	IMSA is a professional association that strives to improve the efficiency, installation, construction, and maintenance of public safety equipment and increase knowledge about traffic controls, radio communications, and related systems. IMSA publishes a journal about new technological advances and ideas in the public safety field, provides educational and certification programs, and hosts an annual conference.

### Exhibit 5-2. Examples of nontraditional industry stakeholders for partnership.

Organization	Description
The U.S. Department of Education (ED)	The U.S. Department of Education promotes student achievement and preparation for global competitiveness by fostering educational excellence and ensuring equal access. This agency collaborates with the U.S. Department of Transportation and the Department of Labor to align career technical education with labor-market needs.
The U.S. Department of Labor (DOL)	DOL fosters, promotes, and develops the welfare of the wage earners, job seekers, and retirees of the United States; improves working conditions; advances opportunities for profitable employment; and assures work-related benefits and rights. DOL's labor projections inform various programs focused on building a strong workforce pipeline for the transportation industry.
American Association of Community Colleges (AACCC)	AACC is an advocacy organization focused on advancing the interests of America's community colleges. AACC facilitates partnerships with various stakeholders, including public and private transportation organizations interested in furthering relevant curricula and encouraging students to pursue a career in transportation.
Associated General Contractors of America (AGC)	AGC is an advocacy organization committed to advancing the interests of general contractors (including those working in transportation construction and maintenance). AGC sponsors a diversity and inclusion initiative, awards those who deserve to be recognized, and provides industry reports that further their profession.
National Association of State Personnel Executives (NASPE)	NASPE is an association that improves collaboration among state government personnel executives in the United States. This association shares knowledge and insights about human resources management with its members through regular meetings, publications, surveys, and discussion forums.



## Group Discussion Questions

1

What keeps you up at night in terms of business challenges and workforce concerns?

2

What mistake did you learn from in your professional career that impacted how you approach work today?

3

What is one key takeaway from our discussion or one thing you plan to consider implementing going forward?

4

What aspect of workforce research do we, as an industry, need to invest in based on the challenges we are facing?

**Contact information:**

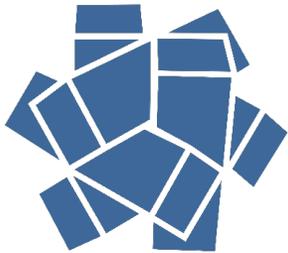
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