

TRANSPORTATION RESEARCH BOARD

# Highway Maintenance Goes to College

Wednesday, November 7, 2018  
1:00-2:30 PM ET

***The Transportation Research Board has met the standards and requirements of the Registered Continuing Education Providers Program. Credit earned on completion of this program will be reported to RCEP. A certificate of completion will be issued to participants that have registered and attended the entire session. As such, it does not include content that may be deemed or construed to be an approval or endorsement by RCEP.***



**REGISTERED CONTINUING EDUCATION PROGRAM**




## Purpose

Discuss highway maintenance education programs at the associate degree level.

## Learning Objectives

At the end of this webinar, you will be able to:

- Identify the training gaps in highway maintenance education and solutions to address the gaps
  - Explain the benefits of an associate degree in highway maintenance management
  - Describe how highway maintenance industry partnerships can contribute to the development of an associate degree in highway maintenance management
  - Describe a program for evaluating prior learning experiences in maintenance for college credit
- 



**Transportation Research Board Webinar**

**TRB Standing Committee AHD15**

**November 7, 2018**

# **Highway Maintenance Management Goes to College**

**Nancy Laffey**, Applied Pavement Technology, Inc.

**Kyle Lester**, Colorado Department of Transportation

**Dr. Nicholas Spezza**, Front Range Community College

**Bitsy Cohn**, Council for Adult and Experiential Learning

**Renee Railsback**, Colorado Local Technical Assistance Program

# Highway Maintenance Goes to College: How Research Supports this Effort

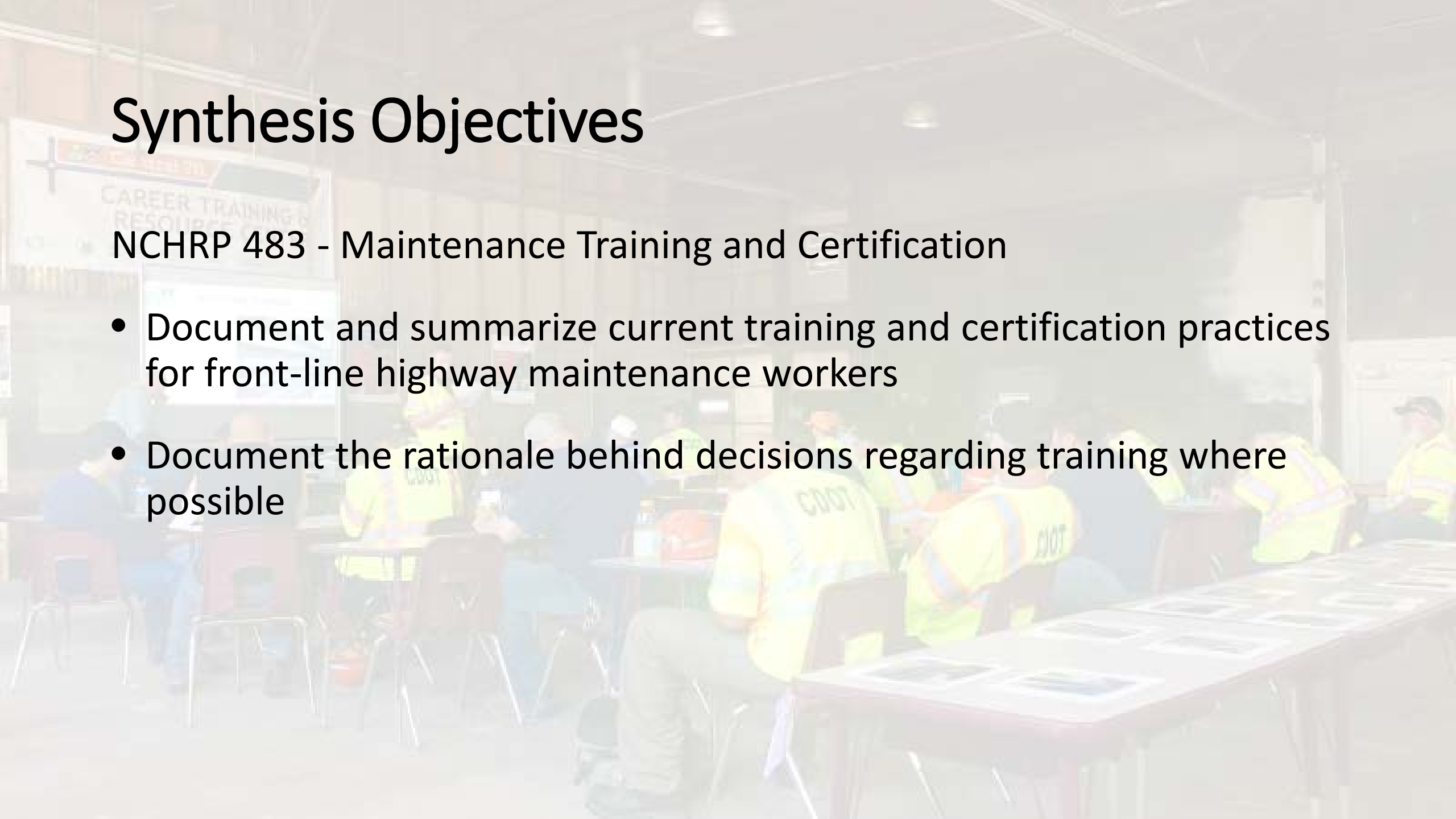
- What Synthesis Data Reveal About...
  - Current training opportunities
  - Approaches to training programs, policies, and partnerships that provide career development for highway maintenance workers



# Synthesis Objectives

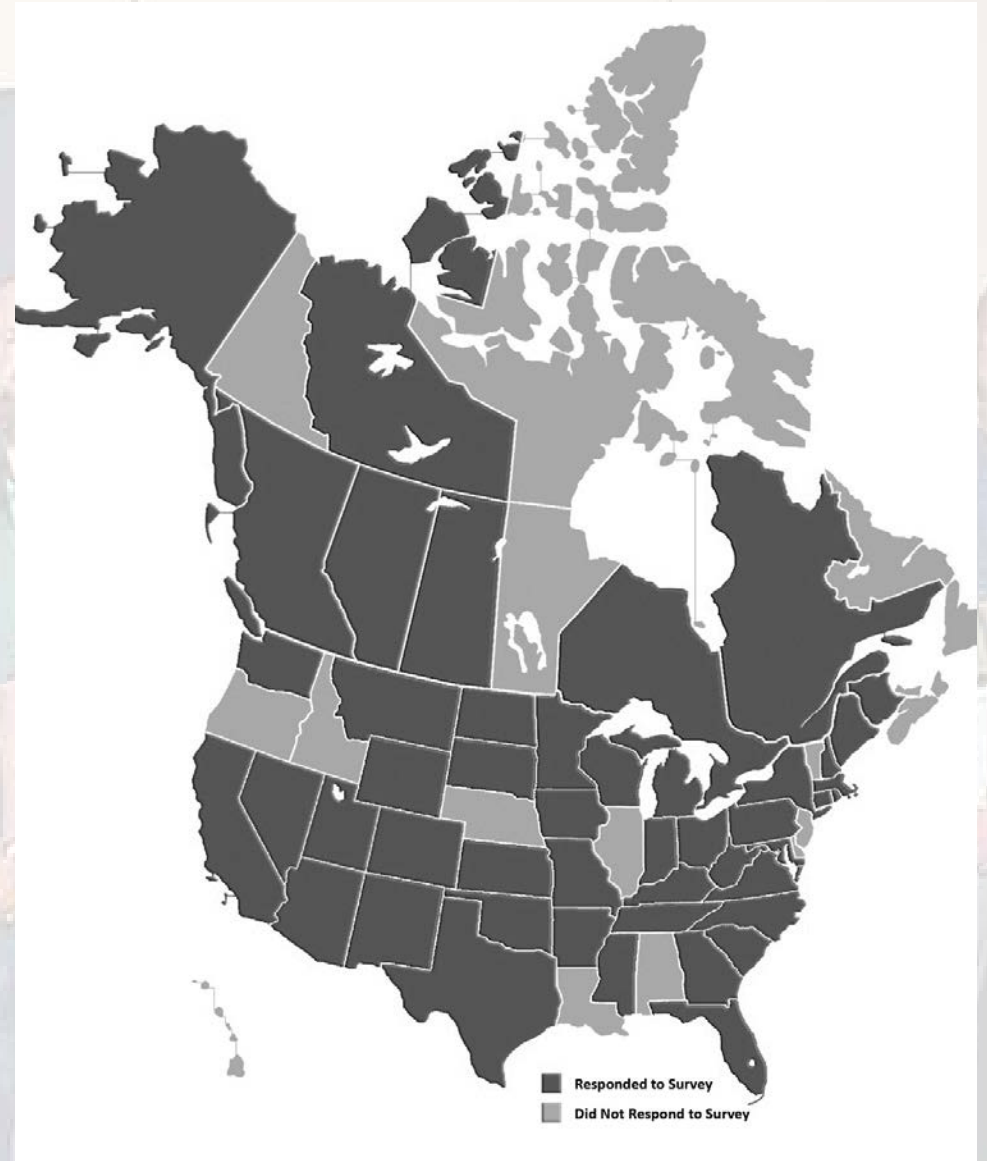
## NCHRP 483 - Maintenance Training and Certification

- Document and summarize current training and certification practices for front-line highway maintenance workers
- Document the rationale behind decisions regarding training where possible

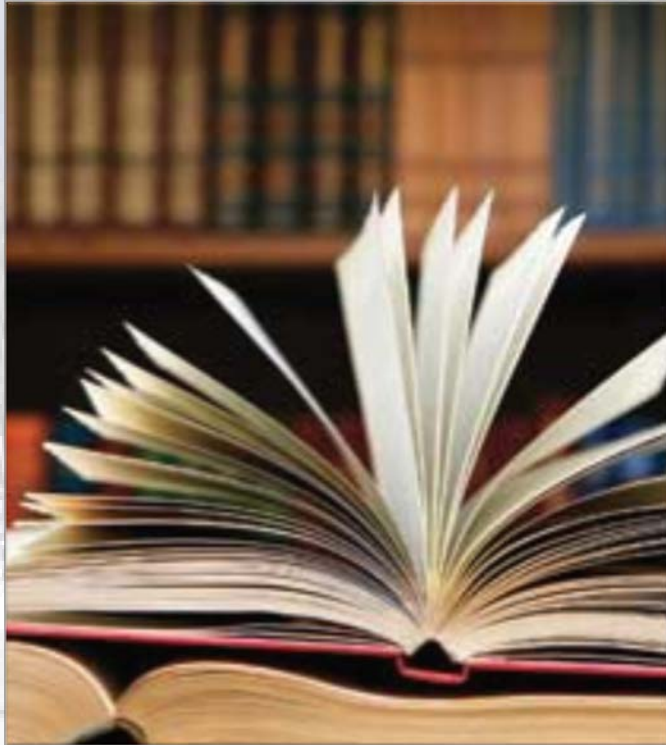


# Who Participated

<b>Agencies</b>	<b># of Respondents</b>
State DOT	41
Canadian MOT	6



# Synthesis Findings



- Training is crucial but often not adequately structured or funded
- Agencies are meeting needs through:
  - Partnering
  - Alternative delivery methods
- Efforts to tie training to performance are inconsistent but vital



# Crucial Training Content Areas



Bridge



Pavement



Highway Safety and Reliability

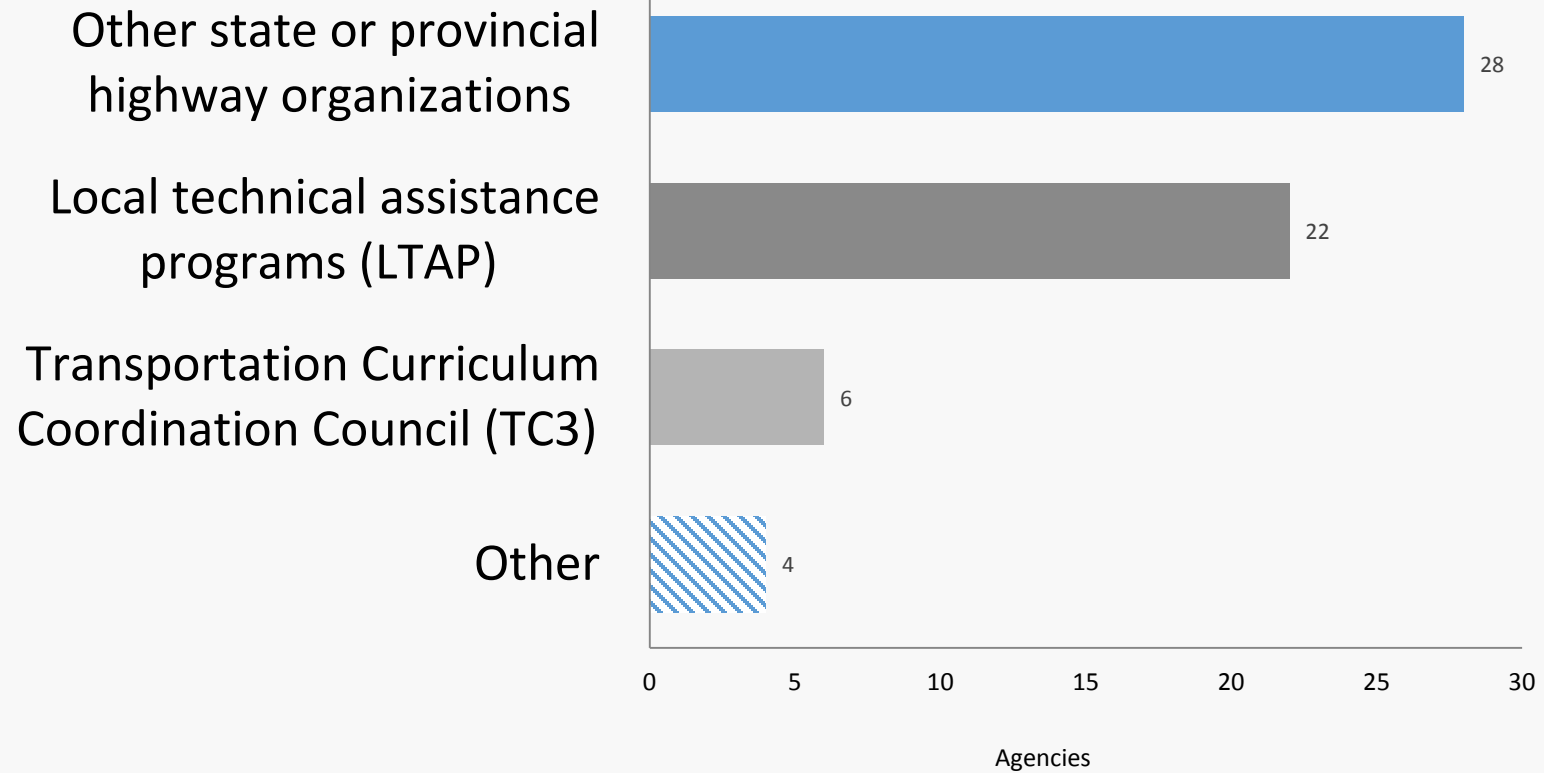


Roadway and Roadside



General Maintenance Skills

# Agency Partners



# Agency Delivery Methods



- Instructor-led, classroom
- Instructor-led, online
- Self-paced
- On-the-job

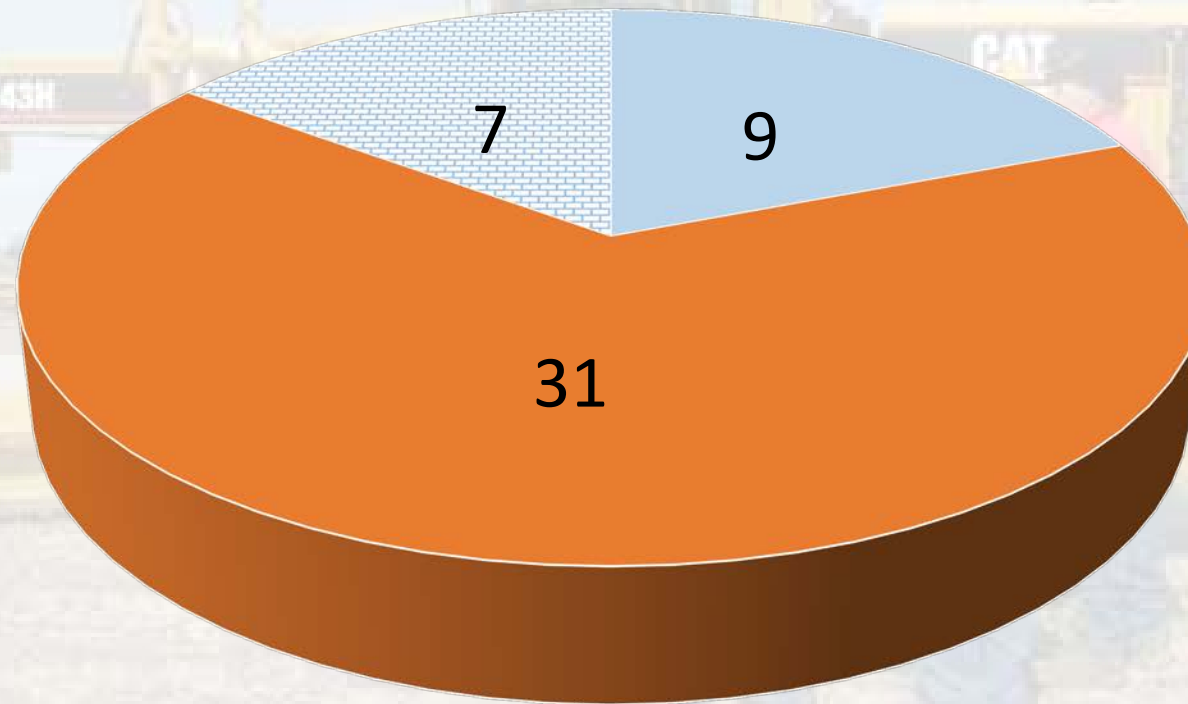


# Measuring the Impact of Training



- Training is aligned with employee performance requirements in 50% of the organizations
- Training is considered by supervisors in 2/3 of the organizations when making promotions
- Very few agencies measure the effectiveness of training

# Are You Measuring the Impact of Training on Workers' Performance?



■ Yes ■ No ■ Don't know

# CDOT and Front Range Community College Are Making Strides



- Provides a structured approach to maintenance training
- Uses partnering and technology to enhance training program
- Delivers content using a variety of methods



# Highway Maintenance Training Opportunities

- Prepare highway maintenance workers to more successfully compete for promotional opportunities
- Standardize employee training and development opportunities within highway maintenance
- Identify job competencies at each level of highway maintenance and link available training and certifications to each level
  - American Association of State Highway and Transportation Officials (AASHTO) TC3 training model
- Partner with community colleges and technical schools to provide a comprehensive highway maintenance management development program

# An Integrated Maintenance Training Model

- Link competencies, needed skill sets, and applicable industry-provided training for each level of highway maintenance
  - American Association of State Highway and Transportation Officials (AASHTO) TC3 (Transportation Curriculum Coordination Council) Training Matrix

## Highway Maintenance Competency: Emergency Management

	Level 1	Level 2	Level 3	Level 4
Skill		Understands emergency management procedures.	Assesses emergency situations to determine appropriate action according to emergency management procedures and policies.	
Training		Incident Command System 200 - Single Resources and Initial Action Incidents (FEMA, DHS)	Incident Command System 300 – Intermediate Incident Management (FEMA, DHS)	



# Do Not Reinvent the Wheel

- Utilize existing training and certifications provided by industry partners in highway maintenance



# Career Pathways in Highway Maintenance

- High School Concurrent Enrollment
  - Students earn college credit in highway maintenance management while in high school
  - Pathway to a job upon graduation
- Highway Construction and Maintenance Workforce Development
  - Once in the industry, continue on to a college degree and upward mobility
  - Earn college credit toward a degree for an apprenticeship
- Technical and Vocation Schools
  - Career ladder in highway maintenance for trade school graduates in welding, heavy equipment operation, and truck driving

# Associate of Applied Science (AAS) in Highway Maintenance Management

## Front Range Community College

- Prepares students to advance to supervisory-/managerial-level positions in highway maintenance within federal, state, county, or municipal public works agencies and private sector industry partner organizations
- Instruction in both the management (e.g., supervision, budgeting, project management) and technical (e.g., roadway pavement; bridges; roadside facilities and grounds; highway safety; winter storm operations; traffic operations; emergency/incident management; environmental protection) aspects of highway maintenance and operations
- Co-created with Colorado Department of Transportation
- Crafted in cooperation with state, county, city, and municipal highway maintenance agencies in Colorado, this program will be offered online making it accessible throughout Colorado and beyond
- First highway maintenance management degree in the nation

# Industry Needs & Program Objectives

- Industry need
  - Need to manage increased complexities and demands of highway maintenance (e.g., new technologies, data analysis, constrained budgets)
  - Need for more focused and integrated training and educational opportunities building upon existing industry-provided training and certifications
- Program objectives
  - Increase level of professionalism among leaders in Highway Maintenance
  - Improve succession planning by elevating competencies of employees
  - Recruit and retain productive employees
  - Improve the lives of employees and their families
  - Create a national model for use by other states

# Industry Partners



- Federal Highway Administration (FHWA)
  - National Highway Institute (NHI)
  - Workforce Development Center – Midwest Region (Univ. of Wisconsin, Madison)
- Colorado Local Technical Assistance Program (LTAP)
- American Public Works Association (APWA)
- American Traffic Safety Services Association (ATSSA)
- Colorado Asphalt Pavement Association (CAPA)
- Colorado Contractors Association (CCA)

# About Front Range Community College

- Vision
  - All students at Front Range Community College will accomplish their educational and career goals. We will be recognized for our *singular focus on student success*, our exceptional teaching, our strong commitment to diverse learners and communities, and our effective business and community partnerships.
- Campuses
  - Larimer (Fort Collins)
  - Boulder County (Longmont)
  - Westminster
- Programs available fully online

# Program Curriculum

- General Education courses (15-16 credits)
- Required Management (MAN) courses (18 credits)
- Required Highway Maintenance Management (HWY) courses (15 credits)
- Elective HWY courses (12 credits)
  - Concentration areas:
    - Highway engineering technician
    - Highway materials and structures
    - Highway equipment operations and management
    - Incident management, emergency management, and weather events
    - Environmental

# Earning Academic Credit

- AAS program will be accessible throughout Colorado and beyond
- Online courses will be available for all required General Education and Management courses
- Required and elective Highway Maintenance Management course credits will be earned through Prior Learning Assessment (PLA)
  - Documented successful completion of approved industry-provided training and certifications
  - Documented competence in highway maintenance from relevant work experience via portfolio assessment
  - Course challenge examinations demonstrating mastery of course content
- FRCC residency requirement: Minimum of 15 credits must be earned through FRCC classroom or online courses



# Levers for Employee/Student Success

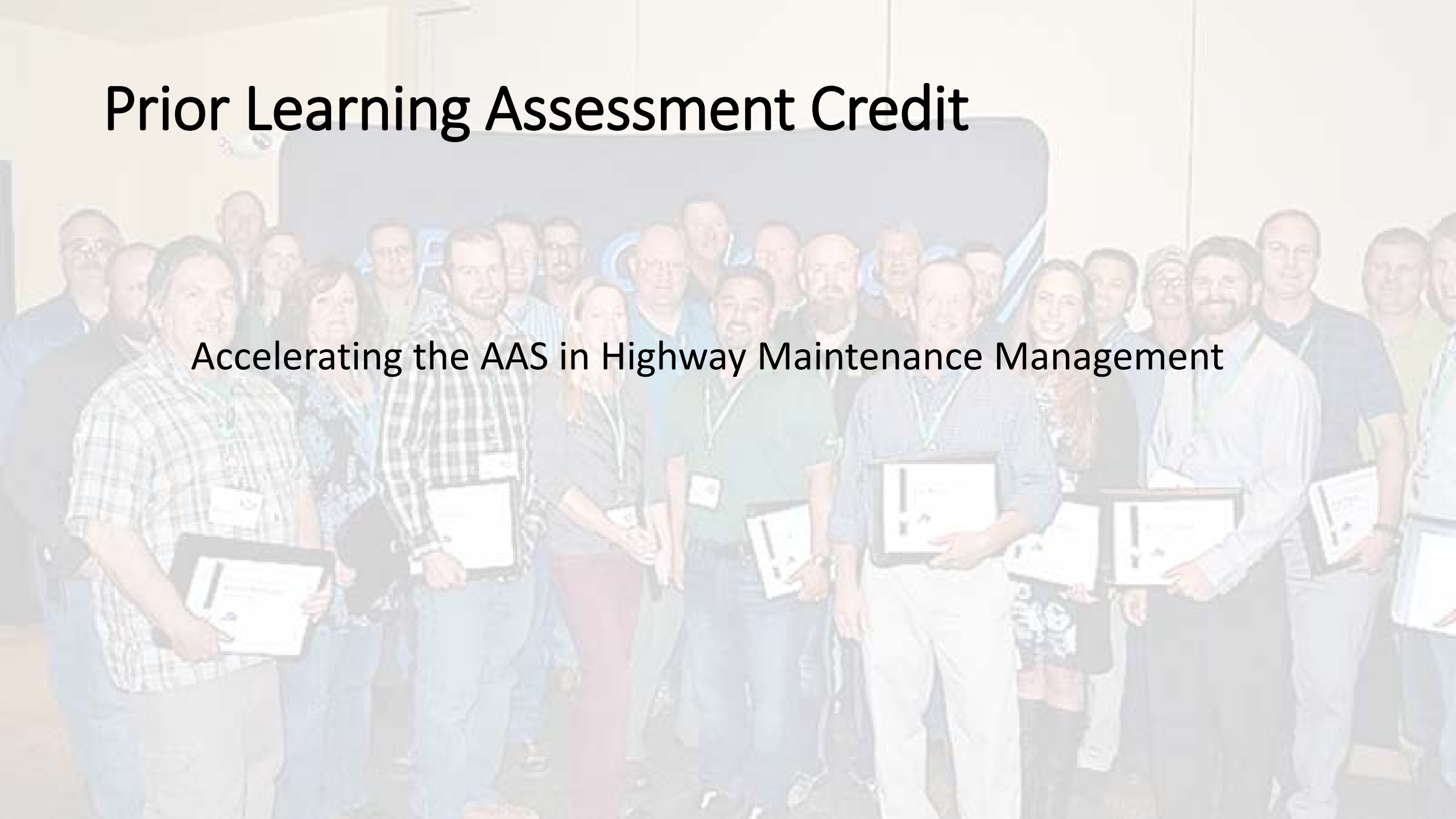
- Prior Learning Assessment (PLA) credit will jump-start an experienced employee toward graduation (will not start with 0 credits)
- HWY 101 course (Introduction to Highway Maintenance and Operations) will be instructed by the Program Director and will be used to advise students, assist with the PLA process, and direct students to available academic support services needed for success
- Industry partnerships will ensure the AAS program uses current industry standards and advances best practices in highway maintenance and operations

# Program Completion Time and Cost

- Time to complete degree will depend upon prior work experience (earned Prior Learning Assessment (PLA) credit)
  - Taking one online course per term (3 courses per year)
  - Completing industry-provided training/certifications concurrently with courses
  - Entry-level employee (no relevant experience): 4 years
  - Experienced employee: 2 years
- Cost to complete degree will depend upon prior work experience (i.e., PLA credit) and employer financial assistance (e.g., tuition assistance and paid industry partner training/certifications)
- Target program launch date: August 2019

# Prior Learning Assessment Credit

Accelerating the AAS in Highway Maintenance Management



# What is Prior Learning Assessment? (PLA)

**Prior Learning Assessment** is the process for evaluating knowledge and skills to award college credit for learning from:



On-the-job training



Independent Study



Military and Volunteer Service

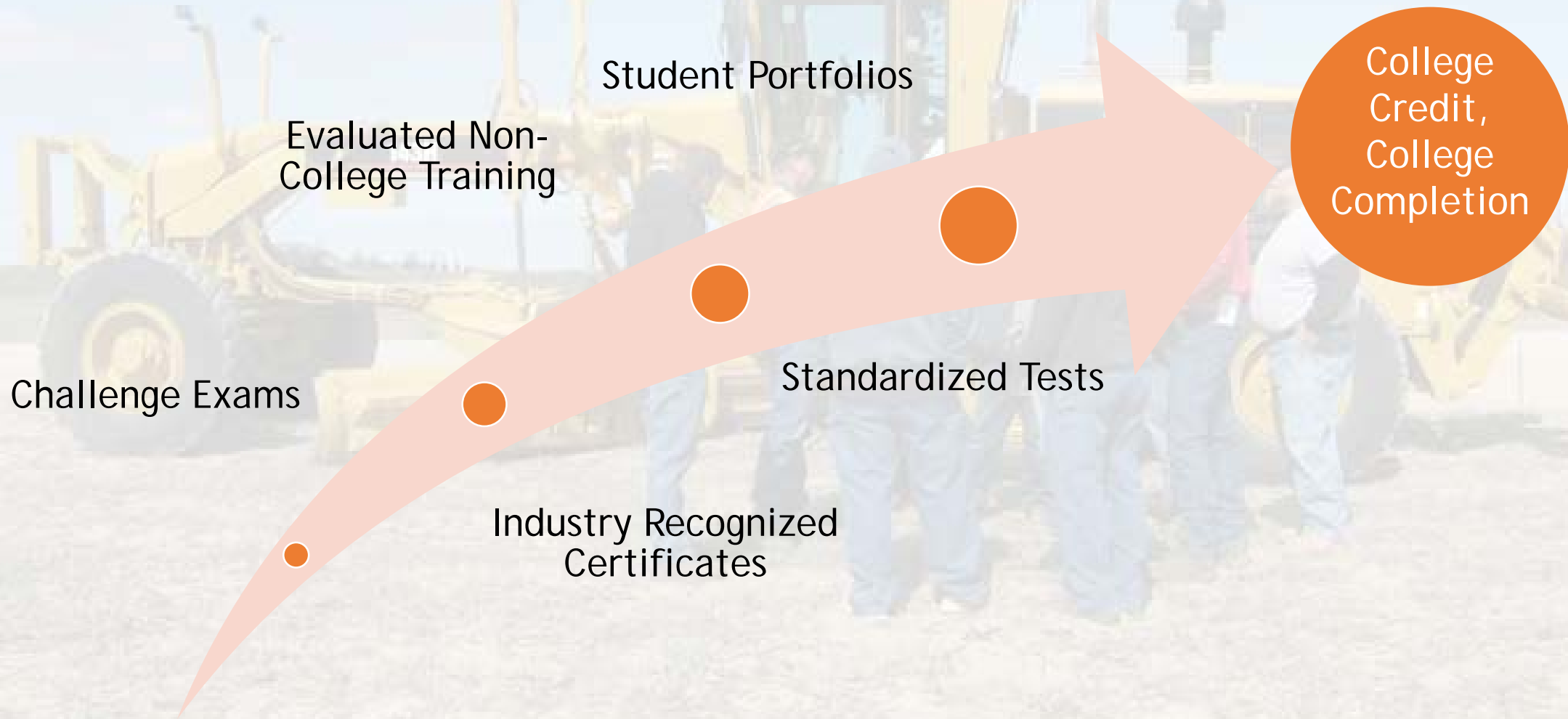


Training Courses and/or Certifications



Work Experience

# The Variety of PLA Methods



# PLA in Colorado

- Colorado Department of Higher Education
  - Standardized Testing
  - Military Credit
  - American Council on Education (ACE) Recommendations
- Colorado Community College System
  - Transfer Policy
  - Matrix
  - Faculty Evaluators

# Where is PLA in the AAS in Highway Maintenance Management Program?

- Training conducted locally and nationally that meets CDOT standards for highway maintenance personnel is being cross-walked to Front Range Community College credit
- PLA credit for General Education courses
- PLA credit for work and life learning that applies to the content requirements of the degree
- 75% of program could be earned via for PLA

# Jenny Q. Rhodes: More Than Halfway There

- Through previous training which has been evaluated for college credit, earns 15 credits for highway maintenance and operations course requirements
- Earns additional 12 elective credits developed in Materials and Structures, and in Highway Equipment Operations and Management specializations
- Through CLEP exam earns 4 MAT 121 credits
  - Can take further standardized tests, if desired, to meet more of the General Education requirements.
- Through Portfolio process, demonstrates technical writing skills equivalent to 3 credits in ENG 131
- BEGINS the degree program with 34 credits earned of the required 60 total for the degree






# Questions & Answers

Moderated by

**Renee Railsback**

Director, Colorado Local Technical Assistance Program

# Today's Speakers

- Renee Railsback, *Colorado LTAP*, [cltap@colorado.edu](mailto:cltap@colorado.edu)
  - Nancy Laffey, *Applied Pavement Technology, Inc.*, [nlaffey@appliedpavement.com](mailto:nlaffey@appliedpavement.com)
  - Kyle Lester, *Colorado Department of Transportation*, [Kyle.Lester@state.co.us](mailto:Kyle.Lester@state.co.us)
  - Nicholas Spezza, *Front Range Community College*, [Nicholas.Spezza@FrontRange.edu](mailto:Nicholas.Spezza@FrontRange.edu)
  - Bitsy Cohn, *Council for Adult and Experiential Learning*, [BCohn@cael.org](mailto:BCohn@cael.org)
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# Get Involved with TRB

- Getting involved is free!
- Join a Standing Committee (<http://bit.ly/2jYRrF6>)
- Become a Friend of a Committee (<http://bit.ly/TRBcommittees>)
  - Networking opportunities
  - May provide a path to become a Standing Committee member
- ***Sponsoring Committee: AHD15***
- For more information: [www.mytrb.org](http://www.mytrb.org)
  - Create your account
  - Update your profile

# Receiving PDH credits

- Must register as an individual to receive credits (no group credits)
- Credits will be reported two to three business days after the webinar
- You will be able to retrieve your certificate from RCEP within one week of the webinar

# TRB turns 100 on November 11, 2020

100  YEARS  
2020

**TRB**

## **Help TRB:**

- Promote the value of transportation research;
- Recognize, honor, and celebrate the TRB community; and
- Highlight 100 years of accomplishments.

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[www.TRB.org/Centennial](http://www.TRB.org/Centennial)

**MOVING IDEAS: ADVANCING SOCIETY—100 YEARS OF TRANSPORTATION RESEARCH**