NTCPI

NATIONAL TRANSPORTATION CAREER PATHWAY INITIATIVE

TRANSPORTATION ENVIRONMENT

CAREER PATHWAY REPORT

SECTION 4 EXCERPT: IMPLEMENTATION PLAN

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SECTION 4.0 CAREER PATHWAY IMPLEMENTATION

4.1 Project Title

"Advancing Future Environmental Workers in Transportation"

4.2 Workforce Priority

New and emerging workforce occupations in the areas of Smart City Technology, ITS, and Shared-Use Mobility, share a core thread with other transportation disciplines in advancing and engaging in work that contributes to major advances in environmental quality. Yet problematically, they have not yet manifested in traditional post-secondary academic environmental programs.

While the first real job pressures are being felt in certified workers in critical ITS knowledge—like traffic and signal technicians and engineers, a number of the new or transforming positions that require training and education all along the post-secondary continuum are seeing rapid rises in demand, particularly at the municipal level.

Providing the knowledge and skills necessary for workers to be competent and effective in these high-technology occupations is becoming a critical factor in sustaining the satisfactory workforce growth necessary to meet the employment demands of this growing sector.

4.3 Project Description

This implementation plan builds an adaptive framework to develop career pathway and educational tools that provide academic and training enhancement to the current workforce, and to demonstrate a reliable pathway for future workers to follow into this rapidly changing and developing field. This plan proposes four distinct interventions to be deployed in geographically proscribed areas, each seeking to lay a foundation for building a career path approach to meeting short and long-term employer needs in partnership with educational institutions.

Collectively, these initiatives will pilot a system to build and advance a career path framework within a local context; one that engages employers around a very specific and expressed need.

Transportation Environment

This provides an opportunity to not just create a programmatic approach to meeting that immediate need, but to use the engagement with employers and partnership building with educational organizations to plant the seeds of a continuum of activity to create sustainable program growth that can been attached to emerging needs along the continuum of work.

Initiative 1: Upskill Incumbent Workers: In Maine, there is a significant problem with finding IMSA-certified personnel to work on any type of signal project[9]. In the Fall of 2017, Maine DOT paid the training costs for anyone interested in upskilling, particularly those incumbents seeking additional credentials (e.g., Traffic Signal Tech Level I & II, Traffic Signal Construction Tech Level II, and Traffic Signal Design/Engineering Tech Level II). Both the Maine and New Hampshire chapters of ITE have been in dialogue about hosting another round of training in Fall 2018 to keep up with the growing need.

This presents an opportunity to create a pilot that serves a more rural/smaller city region, specifically to engage the education and workforce development community to build out technician-level classes that are accessible to both current workers at DOTs, private sector companies, and current CTE/STEM students in related programs. Such a pilot would increase access to IMSA and other key certifications in support of a growing workforce need in expanding smart technologies within these regions. This pilot would serve as a link to ongoing career pathways in the field to maintain a flow of future qualified workers in the field.

This first initiative pilot would target three key objectives:

1. Establish a sustainable platform that offers training and certifications (like IMSA) to incumbent professionals, while also engaging new training and education partners.

2. Engage post-secondary education partners in an exploration of future skill needs and career opportunities (Table 4.3.1.) related to ITS / Smart City technology and examine what resources can be readily integrated into curriculum for certificate and degree programs. This effort will follow on the recommendations of the USDOT ITS Professional Capacity Building (PCB) academic white paper[10]. ITS PCB has a growing repository of teaching materials[11] and hosts annual workshops[12] for post-secondary faculty; this pilot will link area educators to these resources and communities of practice. It will also explore introducing ITE student chapters at colleges in Maine and New Hampshire.

3. Engage university career awareness programs to link curriculum and activities to an exploration of career opportunities in the emerging ITS / Smart City field, by introducing resources and career awareness efforts to middle and high school students.

Table 4.3.1: ITS / Smart City Programming Resources

IMSA Certifications	Indicate individuals have met prerequisite qualifications and passed an examination from an impartial, nationally-recognized association, to establish qualifications to perform specific technical tasks. Moderated programs are held at various locations throughout the year. IMSA certifications include: Electronics in Traffic Signals; Fiber Optics for ITS, Traffic, Fire Alarm, and Communication System Technician; Microprocessors in Traffic Signals; Signs and Pavement Markings; Traffic Signals; Traffic Signal Inspector; Transportation Center System Specialist; Work Zone Traffic Control Safety.
CITE Consortium for ITS Training & Education	Courses and certificate programs include: TSMO Planning and Implementation; ITS Project Management; Performance Measurement; Traffic Engineering & Operations; ITS Telecomm & CV Systems.
NHI National Highway Institute Curriculum	Provides free/paid training for professionals, including Traffic Signal Timing Concepts, Traffic Signal Timing Concepts, ITS Awareness WBT; Improving Highway Safety with ITS, Systems Engineering Fundamentals for ITS, and ITS Deployment Analysis System (IDAS).
ITS Bootcamp Transportation Tech	Addresses the shortage of training materials, curriculum, standards, procedures, and certification capability for ITS and CV technicians. Appropriate for Technical and Community Colleges, universities and organizational training programs.
ITE Learning Hub	Offers webinar courses and on-demand recordings of related presentations, and certifications like: Road Safety Professional, Professional Transportation Planner, and Professional Traffic Operations Engineer.
ITS PCB Professional Capacity Building Program (USDOT)	The ITS ePrimer provides transportation professionals with fundamental concepts and practices related to ITS technologies. This online resource helps practicing professionals and students better understand how ITS is integrated into the planning, design, deployment, and operations of surface transportation systems. ITS ePrimer is a stand-alone reference document for the practitioner as well as a text for education and training programs (Standards Training Modules). ITS PCB offers free ITS standards training: • A 56-module training series for practitioners in state/local highway and transit agencies who seek the skills to procure, test, implement, and operate standards-based ITS systems and devices. Consultants, system designers, integrators, and testers will also find the training informative. • A 21-module transit training series focused exclusively on standards used in transit applications, giving practitioners skills to help them effectively procure/utilize standards used in transit systems.

Initiative 2: Connect Training to Education: Design and promote direct connections between training being developed by professional organizations to keep pace with these rapidly changing technologies/standards and those higher-education programs most likely to direct students to ITS, Smart City, and Shared-Use Mobility careers.

This initiative would seek direction from key area employers and the results of NCHRP 20-07/Task 408 *Transportation System Management and Operations (TSMO) Workforce: Skills, Positions, Recruitment, Retention, and Career Development*[13]. This overview of current (2017) educational programs and practices for recruitment and career development will provide a foundation for proposals for new or enhanced curriculum in existing programs and specific workforce training support programs.

Initiative 3: Host Pathway Tools: Even as work to develop four distinct career pathways continues, key education/training partners will host pilot pathway information and tools to test access and usability from both employer-facing and student-facing perspectives. To evaluate how best to present pathway information in a way that would attract future students and workers into these careers, NETWC has prototyped an [interactive web-based tool](#).

Initiative 4: Local Customization: Create a customizable package that would allow pathway tools to more easily reflect local employers, educational programs, featured career paths, and profiles of current workers.

4.4 Implementation Partners

The role of the NETWC in this implementation will be facilitative. As NTCPI research advanced, the environmental fields and occupations moved into areas beyond the internal expertise of NETWC staff and affiliates. As a result, the delivery and adoption of tools and programs will rely on active partners. The organizations below represent anticipated partners for the pilot project deployment and supporting activities. Signed letters of agreement from each partner will be obtained as this implementation plan is made actionable, including the assignment of host sites to pilot pathway tools and contribute to regional pathway guides.

Employers & Associations: Southern Maine Planning & Development Commission
State DOTs, LTAPs, ITE Chapters (Maine, New Hampshire)

Transportation Environment

Credentialing & Certification:	IMSA New England Chapter
Community Colleges:	Southern Maine Community College
Universities:	University of Maine (Orono)
	University of Southern Maine (Portland)
	University of New Hampshire (Durham)
Education Curriculum:	Consortium for Innovative Transportation Education
	ITS Professional Capacity Building (USDOT)
	Transportation Tech ITS Bootcamp
	National Highway Institute
	ITE Learning Hub

Outreach will be conducted to leaders at key university programs with an initiative related to smart cities, such as [Arizona State](), [UC Berkeley](), [Georgia Tech](), and [Columbia University]().

4.5 Project Outcomes

The expected outcomes for a 2019-2020 deployment include:

Upskill Incumbent Workers

1. Assessment of specific employer needs in entry level ITS fields and certifications.
2. Evaluation of previous training efforts set up by employers and partners.
3. Facilitation of a specific training to meet an urgent certification need.
4. Engagement of one community college and one university program in the training.
5. Plan to develop or modify curriculum in at least one community college and one university program to prepare students directly for key certifications.

Connect Training to Education

1. Assessment by a community college and university program on how to integrate existing independent resources into their curriculum and programs.

2. Draft pilot outline of integrative program at each institution for deployment in 2020.

Host Pathway Tools

1. Assessment by a community college and university program on how to integrate at least one of the four target career pathways into existing degree programs.

2. Establish a draft pathway model for consideration within each institution.

Local Customization

1. Customized demonstration of at least one interactive pathway tool linking at least one education program directly with local employer workforce needs and opportunities.

4.6   Project Timeline

An implementation deployment timeline for the 2019-2020 is proposed below, with an appreciation for the many competing scheduling factors of educational programming. New programming, curriculum review, and student recruitment/engagement requires multiple semesters, so final tests/trials may require an additional semester.

Upskill Incumbent Workers

1. Establish DWG for Pilot Project	July 2019
2. Report on assessment of employer need	August 2020
3. Evaluate previous training efforts	September 2019
4. Facilitate training to meet certification need	November 2019
5. Engage academic program in training	November 2019
6. Plan to develop/modify preparatory curriculum	April 2020
7. Plan to establish pathway certifications (ongoing)	June 2020
8. Report on project status; meet with DWG	Quarterly

Connect Training to Education

1. Curriculum integration assessment	September 2019 – April 2020
2. Draft pilot outline of integrative program	April – June 2020

Host Pathway Tools

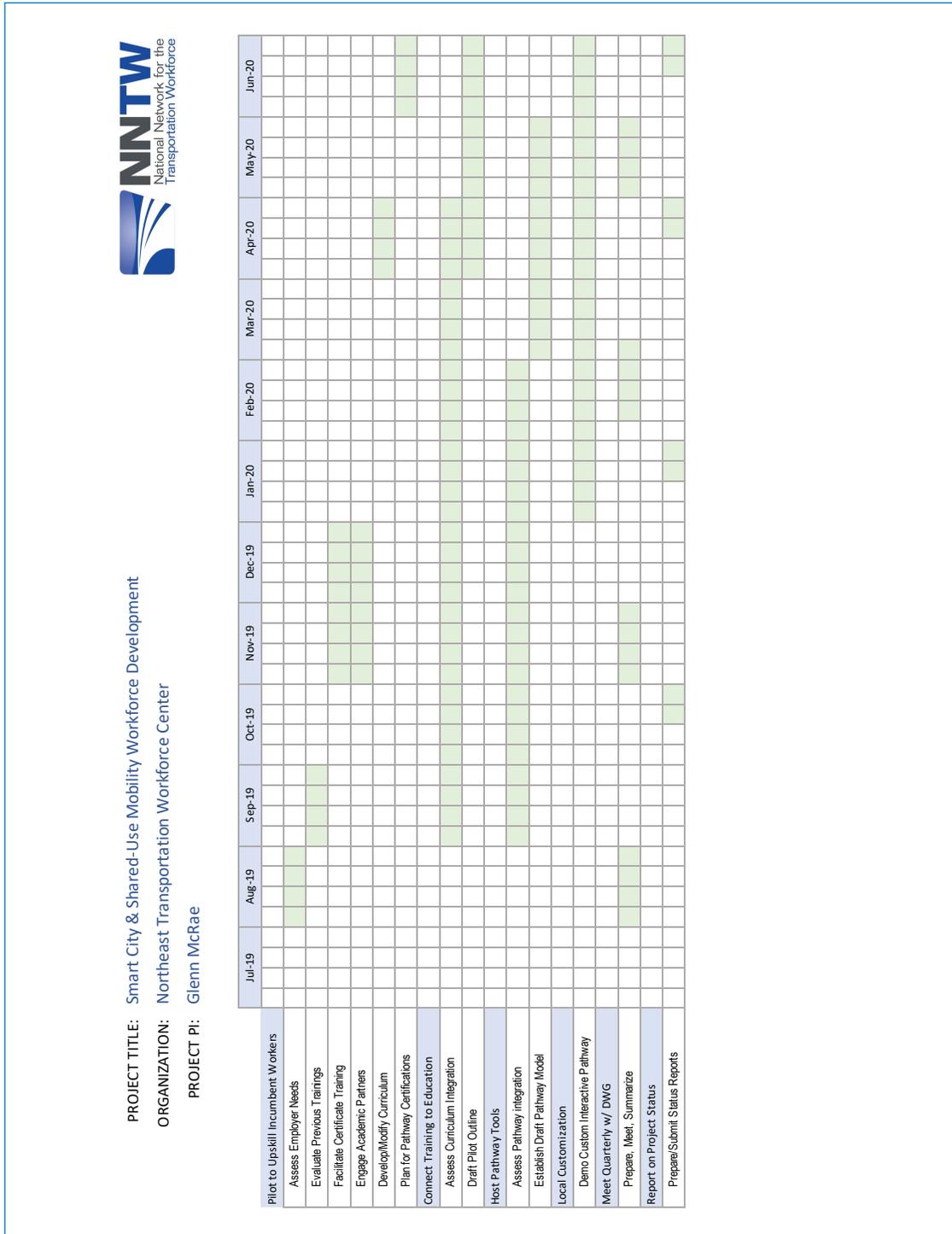|	
1. Pathway integration assessment	September 2019 – February 2020
2. Establish draft pathway model	March – May 2020

Local Customization

1. Custom demonstration of interactive pathway	January – June 2020

4.7   First Year Workplan

PROJECT TITLE: Smart City & Shared-Use Mobility Workforce Development
ORGANIZATION: Northeast Transportation Workforce Center
PROJECT PI: Glenn McRae

NNTW — National Network for the Transportation Workforce

Task	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
Pilot to Upskill Incumbent Workers												
Assess Employer Needs		▓										
Evaluate Previous Trainings			▓									
Facilitate Certificate Training					▓	▓						
Engage Academic Partners					▓	▓						
Develop/Modify Curriculum										▓		
Plan for Pathway Certifications											▓	▓
Connect Training to Education												
Assess Curriculum Integration			▓							▓		▓
Draft Pilot Outline												
Host Pathway Tools												
Assess Pathway integration			▓						▓			
Establish Draft Pathway Model								▓		▓		
Local Customization												
Demo Custom Interactive Pathway							▓				▓	
Meet Quarterly w/ DWG												
Prepare, Meet, Summarize		▓			▓			▓			▓	
Report on Project Status												
Prepare/Submit Status Reports				▓			▓			▓		▓

(end of report)