



A report by the University of Vermont Transportation Research Center

# Transportation Workforce Development at Community Colleges

---

Report # 10-002 | March 2010



# **Transportation Workforce Development at Community Colleges**

March 2010

Prepared by:  
Karen Glitman

University of Vermont  
Transportation Research Center  
Farrell Hall  
210 Colchester Avenue  
Burlington, VT 05405

Phone: (802) 656-1312  
Website: [www.uvm.edu/trc](http://www.uvm.edu/trc)

## **Acknowledgements**

We would like to acknowledge the support of the American Association of Community Colleges for their assistance in creating the survey that became the basis for this report. Additionally, we wish to thank the many community colleges that took the time to complete the survey and respond to follow-up inquiries. We acknowledge the contribution of Clark Martin, Roger Dean and Mike Burk from the Federal Highway Administration (FHWA), Lydia Mercado from the Research and Innovative Technology Administration (RITA), Lisa Colbert from the Federal Transit Administration (FTA) and Stacy Cormier. This report is based upon work supported by the Federal Highway Administration under Grant No. DRFH61-080G-00007.

## **Disclaimer**

The contents of this report reflect the views of the author, who is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the University of Vermont (UVM) Transportation Research Center or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation.

# Table of Contents

1. Executive Summary.....	1
2. Introduction .....	3
3. Research Methodology .....	5
4. Survey Results .....	6
5. Best Practices.....	13
6. Recommendations.....	16
Selected Bibliography .....	19
Appendices	
Appendix A: Survey Cover Letter .....	20
Appendix B: Survey .....	22
Appendix C: Participating Community Colleges .....	25
Appendix D: Scholarships .....	27
Appendix E: Internships.....	28
References .....	28

# List of Figures

Figure 1: Community Colleges Offering a Degree and/or Certificate Program in this Area.....	7
Figure 2: Community Colleges Planning to Initiate or Expand Coursework in this Area.....	8
Figure 3: Community Colleges Offering Modal Specific Transportation Degree or Certificate Programs (pullout map).....	last page
Figure 4: Community Colleges Having Access to Specialized Equipment .....	9
Figure 5: Community Colleges Intending to Purchase Specialized Equipment .....	9
Figure 6: Specialized Equipment Purchases By Type .....	10
Figure 7: Community Colleges with a Partnership Related to Transportation.....	11
Figure 8: Types of Strategic Partnerships Related to Transportation .....	11

# 1. Executive Summary

The need for proactive and coordinated workforce development in the transportation sector has intensified with the impending retirement of hundreds of thousands of workers from the Baby Boom generation, and the changing nature of the work of transportation agencies at the federal, state and local levels and in the private sector. Meeting these demands will require a comprehensive, intermodal strategy that develops a workforce that represents our nation's diversity. This new workforce will need to create and maintain a sustainable, barrier-free, socially inclusive mobility system that reflects the U.S. Department of Transportation's (U.S. DOT's) goals for safety, livable communities, economic competitiveness, environmental sustainability, and organizational excellence.

This effort has many prongs, including efforts to develop a National Transportation Workforce Development Strategy led by the Research and Innovative Technology Administration (RITA) and the Council of University Transportation Centers (CUTC). The development of the national strategy will include key national transportation and professional organizations, and is expected to result in a series of actions and recommendations for improved transportation workforce development. Key components in the effort to develop a national strategy include a series of Regional Workforce Summits hosted by University Transportation Centers and a planned National Transportation Workforce Summit being organized by RITA with CUTC and transportation partner organization support.

Community college participation and endorsement will be integral to the success of a National Transportation Workforce Development Strategy. The University of Vermont Transportation Research Center (TRC) analyzed the results of a survey conducted with the American Association of Community Colleges (AACC) that sought to quantify existing community colleges' programs, infrastructure and partnerships preparing students for careers in transportation. Building upon data from this survey, the TRC has analyzed what transportation training exists at community colleges today and how that curriculum is supported by both investments in specialized equipment and through strategic partnerships. As detailed in the following report:

- The majority of schools reported having programs that develop skills relevant to the transportation sector, especially general skills (finance, technologies, operations and maintenance) that are transferrable to non-transportation industries.
- Where schools are planning to expand or initiate transportation curriculum, it is primarily in technical areas, such as engineering, where the skills may extend to sectors other than transportation.
- Similarly, where schools indicated having specialized equipment, most of the investment was for tools that could be leveraged beyond transportation studies. Few schools reported owning or having access to transportation-specific equipment, such as training ships, rail cars, or airplane fuselages.

- The majority of schools reported having strategic partnerships with other schools; federal, state, and municipal government entities; and private companies – supporting their transportation-related efforts.

Collectively, this data suggests that there is a solid foundation within community colleges to deliver transportation-related training, but that additional investment and coordination likely will be necessary to support future workforce needs. To that end, this report lays out both best practices for community colleges looking to increase their transportation programs and recommendations for how the U.S. DOT can best stimulate and support the evolution of community colleges as a key pillar in the transportation workforce development infrastructure.

## 2. Introduction

Almost 20 million U.S. workers held transportation-related jobs in 2002, accounting for 16% of total occupational employment.<sup>1</sup> In fact, approximately 1 in every 7 jobs in the U.S. workforce is in some way connected to transportation. Both the private and public sectors face a growing challenge in finding workers with the specialized skills needed to fill these jobs. This situation is expected to worsen as the baby boom generation retires, creating an exodus of experienced employees; up to 50% of the current transportation workforce could leave over the next 10 years.<sup>2</sup> Replacing those workers will be challenging. Fewer workers are entering transportation-related fields, and competition is growing across industries for the most qualified candidates. Additionally, the skill set needed to successfully deliver and manage transportation systems and services are evolving; shifting greater importance to areas such as financing, project management, communications and public engagement.<sup>3</sup>

Historically, transportation workforce development, where it has occurred, has consisted of fragmented efforts led by public, private and academic organizations with little or no coordination. While these efforts successfully filled the immediate needs, they have not begun to address the long-term challenge of cultivating a workforce that can support transportation throughout the 21st century. In order to develop the qualified and high-performing transportation workforce required to meet the demands of the rapidly changing 21st century transportation system, a comprehensive and widely supported strategy is needed. Under the leadership of the Council of University Transportation Centers (CUTC) and the Research and Innovative Technology Administration (RITA), an effort is underway to develop a National Transportation Workforce Development Strategy. In addition to continuing discussions with key transportation organizations, and Regional Workforce Summits sponsored by University Transportation Centers, a national summit of representatives from all transportation modes, academia, and public and private transportation organizations is planned for November, 2010. The national workforce initiative, including the regional and national summits will be important in helping to shape the national strategy and provide a springboard for near-term and long-term action.

To be most productive, the National Transportation Workforce Development Initiative stakeholders should have a clear sense of what policies, programs, and resources are necessary to support successful transportation workforce development today. One area of great potential is the far-reaching network of community colleges that serves close to half of the undergraduate students in the United States, and which, in the fall of 2005, included more than 6.5 million credit students.<sup>4</sup> Traditionally specializing in technical and vocational training, community colleges are well positioned to provide transportation-related skill development both to those new to the workforce as well as to mid-career workers in need of additional training.<sup>5</sup> Additionally, given their role in ‘feeding’ graduating students to four-year institutions, community colleges offer a chance to introduce transportation careers to students studying broader topics ranging from business, planning, environmental science, and public policy.<sup>6</sup>



With this in mind, the University of Vermont Transportation Research Center analyzed results from a survey conducted with the American Association of Community Colleges (AACC) to determine the curriculum, facilities, equipment and partnerships that community colleges presently have in place, or could administer or develop, that will prepare students for a career in transportation. This analysis culminates in several key actions that may be taken both by community colleges and by the U.S. DOT to better leverage community colleges as a mechanism for increased transportation workforce development.

### **3. Research Methodology**

The conclusions and recommendations contained within are based in large part on the results of a Web survey conducted with members of the American Association of Community Colleges in the fall of 2009. The survey was promoted via email to contacts at approximately 1100 community colleges in the United States. Using SurveyMonkey.com, 167 responses (approximately 15% of possible respondents) were captured over a 2-month period ending in December 2009. While respondents had the option of submitting anonymously, a list of those schools that did self-identify is included in Appendix C. Follow-up interviews were conducted with select participating schools to probe survey answers and better understand drivers behind transportation curricula decisions. Finally, a review of the literature on transportation workforce development (listed under Selected Bibliography) was completed to provide context and validate conclusions.

## 4. Survey Results

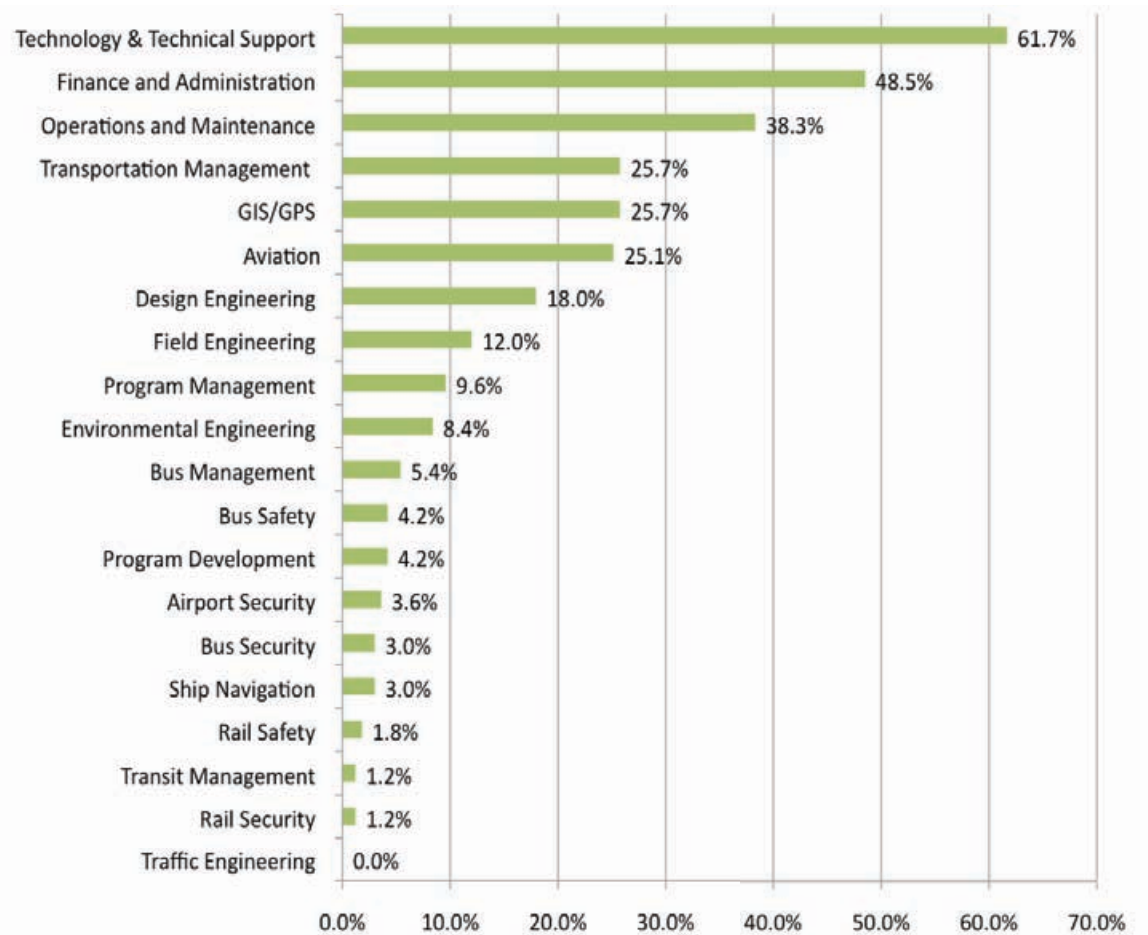
The survey sought to learn more about community colleges' activities in three areas: Curriculum, Facilities & Equipment, and Partnerships.

### Curriculum

A significant challenge in clearly articulating the transportation sector workforce comes from a seeming paradox: while transportation jobs are ubiquitous they are also invisible, hidden throughout other industries or historically unnoticed by a population that assumes the transportation system will be there to meet their needs. While 19.2% of community colleges report having degrees, certificates or courses with "transportation" in the title, the vast majority of those were focused on automotive technologies, commercial driving, or supply chain/logistics. There was no mention of the broader skills and training needed for continuing to fill the breadth and depth of transportation jobs expected to become available over the next decade. Based on the definition in "A Complete Count of the U.S. Transportation Workforce"<sup>7</sup>, transportation jobs fall across 74 occupational categories, not all specific to or readily identified with the transportation industry. In an ideal scenario, community colleges would have the resources and curriculum needed to address the disparate training needs of these various occupations. To begin addressing this paradox, this survey identified transportation curricula in three broad categories: General Studies, Shared Technical, and Modal Specific.

General Studies includes broader skills that are needed in some form throughout most industries. These include Finance & Administration, Operations & Maintenance, Program Development, Program Management, and Technology/Technical Support. Not surprisingly, 89.7% of community colleges reported offering degree or certificate programs in at least one of these subject areas. The three most popular areas of transportation-related curriculum (Figure 1) all fall within the General Studies category: Technology and Technical Support (61.7%), Finance & Administration (48.5%), and Operations and Maintenance (38.3%). While not specifically transportation training, these General Studies courses and programs provide skills essential to the transportation industry and create a solid foundation for transportation workforce development. The crossover appeal of General Studies courses and programs make them an ideal foundation for a community college to begin addressing transportation workforce development needs.

**Figure 1: Community Colleges Offering a Degree and/or Certificate Program in this Area**

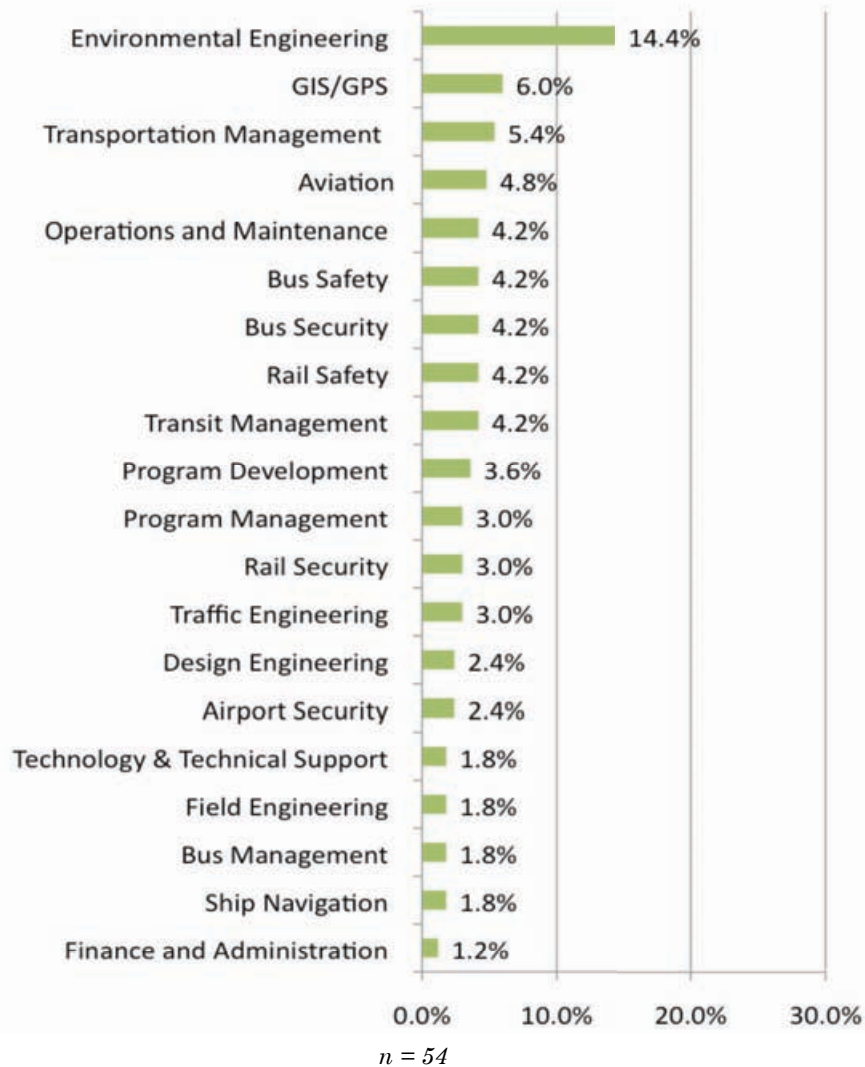


*n = 145*

Shared Technical courses and programs are those delivering technical skills that may be applied across all forms of transportation, as well as to non-transportation fields. These include Environmental Engineering, Field Engineering, GIS/GPS, Design Engineering, and Transportation Management. In light of community colleges' historic focus on delivering technical and vocational training, it not surprising that 60.9% of schools reported degree or certificate programs in at least one Shared Technical subject area. However, of the individual areas of study in this category (i.e., Environmental Engineering or Design Engineering), few are available at more than one-third of community colleges. (This may be a reflection of the 'feeder' role of many community colleges, which may assume that students can take these advanced technical courses at a four-year institution.) This statistic is likely soon to change, as 74.1% of schools reported plans to add Shared Technical offerings to their curriculum – in fact, the three study areas that were most likely to be initiated or expanded (Figure 2) are all in the Shared Technical category: Environmental Engineering, GIS/GPS, and Transportation Management.

Modal Specific studies that focus on specialized skills are needed to support each of the primary modes of transportation: Aviation, Maritime, Rail, Highway and Transit. As jobs in these modes are often tied to transportation infrastructure, the need for these skills, other than in highway, is relatively localized. Given that, it is significant that 40.7% of community colleges nationwide already offer degree or certificate programs in Modal Specific studies. Additionally, 37.0% of schools report plans to add Modal Specific coursework. Of those, the greatest interest appears to be in adding or expanding Aviation (55.0%) or Bus (55.0%) training; 40.0% of these schools plan to initiate offerings for more than one mode of transportation. Most striking is that 80.0% of these community colleges plan to introduce coursework for a mode of transportation they do not currently support.

**Figure 2: Community Colleges Planning to Initiate or Expand Coursework in this Area**

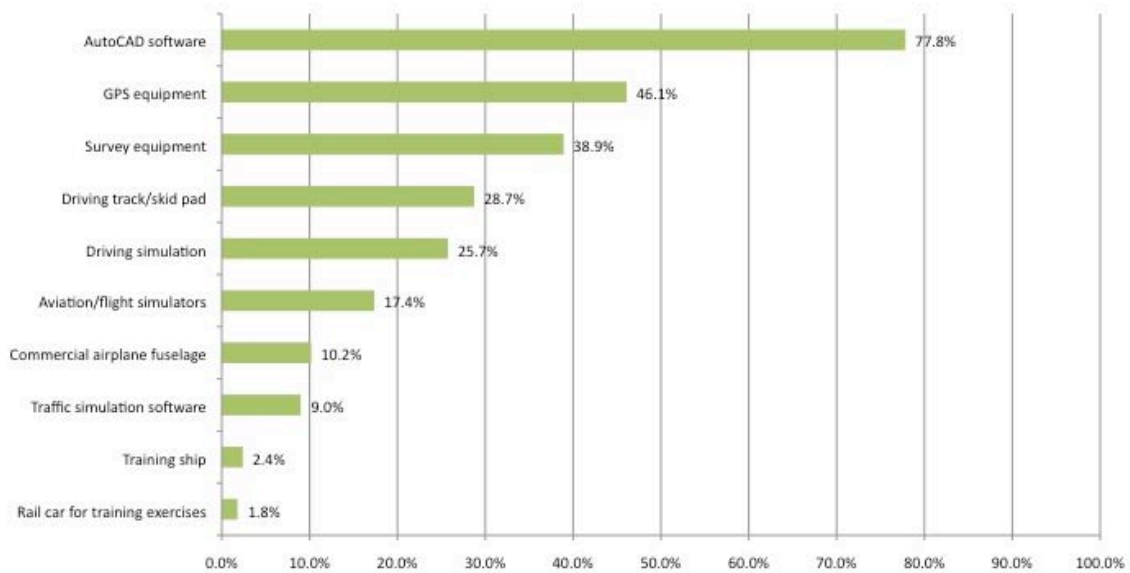


See also **Figure 3: Community Colleges Offering Modal Specific Transportation Degree or Certificate Programs**, a pullout map at the end of this report.

**Facilities & Equipment**

Teaching the skills needed by the transportation sector often requires investment in specialized facilities and equipment. Currently, 85.6% of schools own facilities or equipment that may be used to support their transportation-related curriculum. The most popular tools are those that may also be used for non-transportation courses (Figure 4): Auto CAD (owned by 77.2% of schools), GPS (44.9%), and Surveying equipment (37.7%).

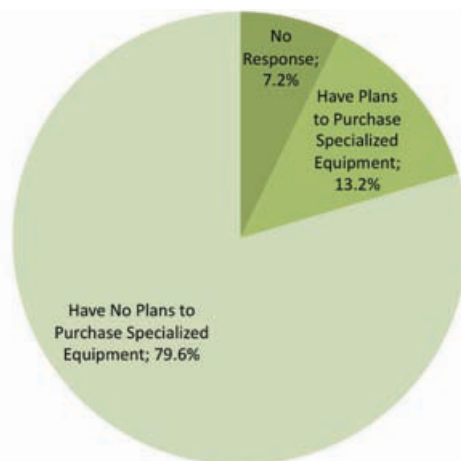
**Figure 4: Community Colleges Having Access to Specialized Equipment**



*n = 143*

Additionally, 13.2% of schools plan on purchasing facilities or specialized equipment in support of their transportation-related curriculum within the next 12 months, with the most popular investments being GPS and Surveying equipment (Figure 5).

**Figure 5: Community Colleges Intending to Purchase Specialized Equipment**

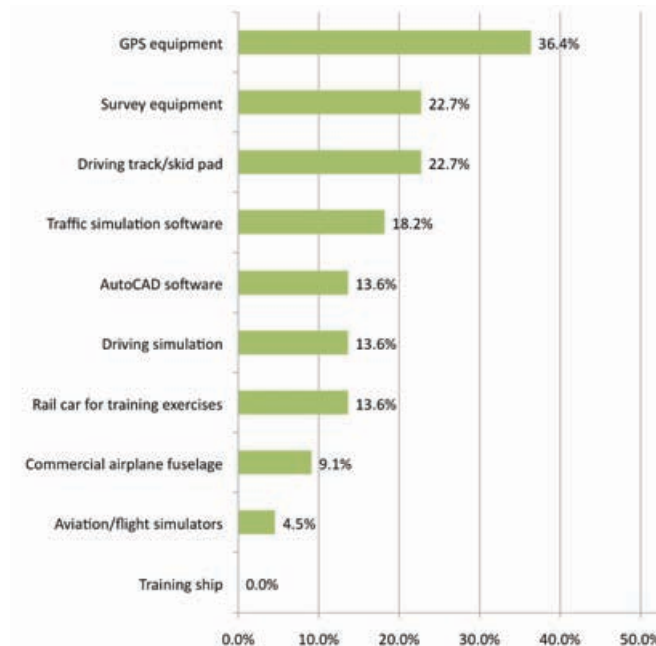


*n = 167*

While 43.1% of schools reported having equipment for mode-specific training, that number is skewed by automotive equipment, such as a driving track/skid pads (at 23.4% of community colleges) and driving simulators (24.0%). The numbers for other modes of transportation (Air, Rail, Marine) are much lower, which is expected, given that the niche nature of modal-specific curricula is closely tied to the local transportation infrastructure. That said, assuming that those community colleges with specialized equipment were among the most likely to respond to this survey, it is likely that nationwide there are only 5-10 rail cars, 3-5 training ships, and 20-30 airplane fuselages. Further research is needed to determine whether this is enough to meet the growing need for training in these areas.

Regarding access to transportation simulators, only 18.6% have or share specialized simulation equipment, including those related to virtual reality/game formats, commercial truck driving, flight planning, and air traffic control. Though not addressed by this survey, it is likely that this form of training will become more popular as a means of giving more people ‘hands on’ experience prior to entering the transportation workforce.

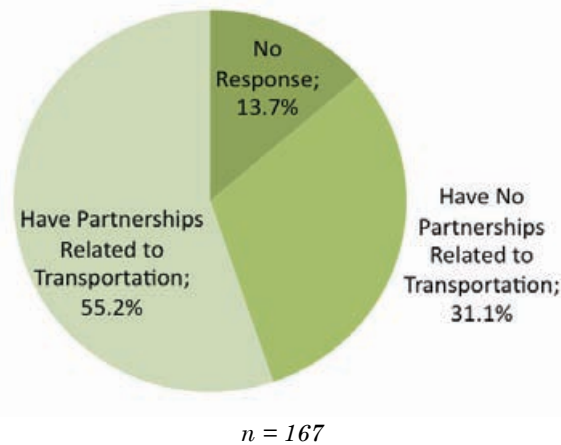
**Figure 6: Specialized Equipment Purchases by Type\***



**Partnerships**

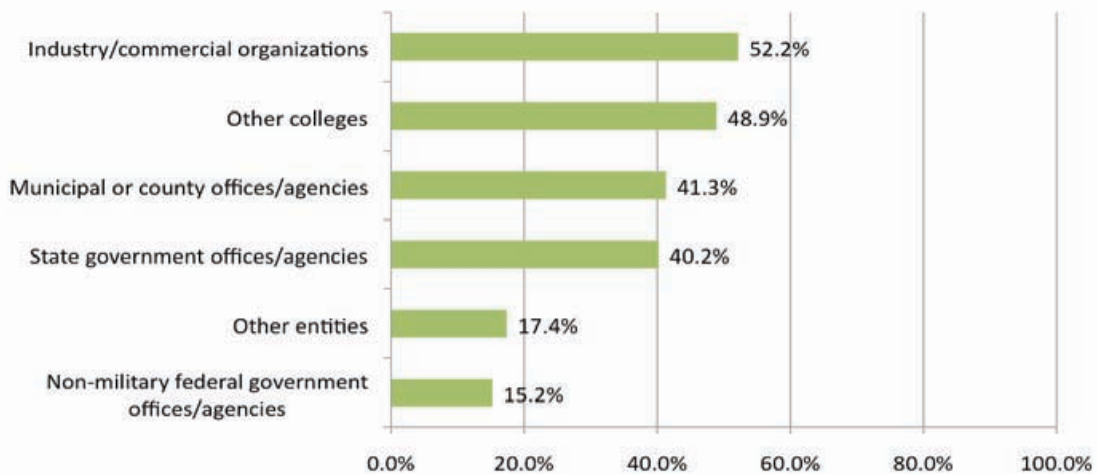
The majority (55.2%) of community colleges reported having partnerships – with other schools, private industry, and government entities (Figure 7) – in support of their transportation-related efforts. Additionally, almost one-third (29.9%) of schools reported engaging in partnerships with more than one type of partner.

**Figure 7: Community Colleges with a Partnership Related to Transportation**



Of those schools with partnerships, 62.0% (Figure 8) have them with government entities – especially those at the local/municipal (66.6% of those partnering with government entities) and state (64.9%) levels, where community colleges receive much of their funding and can gain program direction. Of those schools already collaborating with the government on transportation-related efforts, only 24.6% have partners in the federal government (primarily for certification guidance) – thus indicating an untapped opportunity for additional funding and expertise.

**Figure 8: Types of Strategic Partnerships Related to Transportation\***



\* of those schools with partnerships related to transportation (*n* = 92)

Private industry is also a strong resource for support; 52.2% of schools engaging in partnerships do so with private companies, who share facilities and expertise, provide funding (via grants) and guidance for curriculum development, and promote the colleges as the means for gaining advanced training. In addition to driving demand for a community college’s graduates, local employers may also engage the school to develop customized, non-credit training and can provide mentorship to students.



Finally, 48.9% of schools with partnerships have them with other colleges, including both other community colleges and 4-year institutions. These partnerships provide access to facilities, equipment, and expertise; additionally, as community college graduates may chose to continue their education, these 4-year colleges provide invaluable guidance on curriculum development.

## 5. Best Practices

As the survey responses make apparent, many community colleges are taking significant steps in the area of transportation workforce development. Their 'best practices' may be useful to other community colleges interested in developing or enhancing their transportation-related course offerings.

### **Establish a formalized advisory board with representation from both private and public sector partners.**

Of those community colleges with transportation offerings, a majority cited strategic partnerships as playing a role in their success. One way to formalize these relationships is to ask partners to participate in an advisory board that meets regularly to provide feedback and guidance. For example, South Carolina-based Greenville Technical College's Aircraft Maintenance Technology program has an advisory board with participation from both local employers (including Lockheed Martin and Honeywell) and public entities like the Federal Aviation Administration. The board meets several times a year to discuss curriculum development, equipment needs and other topics to ensure the program continues building a workforce with current skills and experience.

### **Enhance the transportation aspect of existing complementary degree and certificate programs by broadening the content to include relevant transportation concepts and skills.**

As discussed previously, one of the challenges in transportation workforce development is that transportation jobs are found in many different industries beyond the traditional transportation sector. This can make it difficult to see the demand for transportation skill development and training. However, several schools reported taking an innovative approach by adding transportation topics to popular existing programs as varied as Renewable Energy, Emergency Medical Services, and Construction – in Florida, Santa Fe College's Institute of Public Safety includes coursework on airport, bus, and rail security. This kind of cross-pollination has the added benefit of introducing transportation careers to students who might not otherwise have thought to consider them.

### **Cultivate student interest in transportation through K-12 outreach.**

Given the hidden nature of many transportation jobs, it is never too early to begin educating students about these opportunities. In the case of South Carolina-based Guilford Technical Community College's Aviation Systems Program, that means hosting summer camps for middle- and high school students to introduce them to potential careers while giving them hands-on experiences (like working on a commercial airline fuselage) that showcase exciting aspects of transportation. GTCC also engages parents, speaking to them directly about the necessary training, and soliciting their help in the students' success. This early engagement generates demand for the school's program, while also preparing students for what to expect both during skill development and in real world applications. Several national programs specifically target middle and high school students, including the Federal Highway

Administration's (FHWA's) National Summer Transportation Institute, the American Association of State and Highway Transportation Officials (AASHTO) TRAC program, the Associated General Contractors' "Build Up: program and a number of engineering competitions sponsored by the American Society of Civil Engineers. Community colleges are encouraged to contact transportation and professional organizations to identify opportunities for partnering and collaboration. A list of organizations and programs can be found in the Federal Highway Administration's "Catalog of Transportation Education, Training and Workforce Development Programs and Resources", 2008 at [www.fhwa.dot.gov/transprocat](http://www.fhwa.dot.gov/transprocat).

**Investigate existing state and federal programs as potential sources of funding, expertise, and assistance for establishing or enhancing transportation curriculum.**

Based on the survey feedback, one potential barrier to developing a transportation curriculum is the lack of start-up resources. Several federal organizations and agencies – including the Department of Transportation and the National Science Foundation, among others – have existing programs that might help. New Jersey's Union City College receives a grant from the Department of Labor's Workforce Innovation in Regional Economic Development (WIRED) program that provided for the creation of non-credit classes on skill development for careers in Transportation, Logistics & Distribution. Similarly, Vermont Technical College received federal funding under the Transportation Education Development Pilot Program (TEDPP) to provide in-service training for Maine, Vermont and New Hampshire Department of Transportation workers looking at succession planning and knowledge transfer. Limited funding and assistance is available for those schools hoping to do more related transportation workforce development. (Additional information is available in the Federal Highway Administration's "Catalog of Transportation Education, Training, and Workforce Development Programs and Resources," 2008.)

**Engage private and public sector organizations for real-world internships and mentoring.**

Internships and mentorships are an excellent way to help students translate their classroom learning into real-world experiences. As part of several certificate programs, Seattle Central Community College's maritime program, the Seattle Maritime Academy, offers 30- and 90-day internships on at-sea commercial vessels where students can gain confidence in their new skills and prepare for the rigors of a full-time career. These internships are a key feature in attracting new students to the program. Community colleges may also direct students to public sector internship programs, such as the FHWA's Student Career Experience Program (SCEP), which provides full- or part-time work in areas such as engineering, highway safety, intelligent transportation systems, and finance. (For a list of other national internship programs, refer to the Appendix.)

**Tap into private and public sector demand for customized, non-credit training that can become the foundation for building a broader transportation program.**

Located near the bustling New York Harbor, Kingsborough Community College offers courses related to aviation and maritime through its Tourism & Hospitality Department. It

recently had the opportunity to expand its transportation offering by designing a non-credit program for the Metropolitan Transportation Authority, the public agency that manages the area's complex subway, bus and rail operations. Kingsborough Community College created training on communications and customer service, skills that have grown in importance as the nature of the work has evolved with the industry's increased focus on public engagement and involvement. This is a prime example of the essential role community colleges can play in helping existing transportation workers grow and transition to meet the changing demands of the transportation sector.

## 6. Recommendations

Based on the results of this survey, and utilizing the existing network of community colleges, there are several important steps the U.S. Department of Transportation should take to stimulate and escalate workforce development.

The U.S. DOT should:

1. Lead private, public and academic sector transportation stakeholders in establishing and promoting a common language for transportation workforce development, including refined job definitions and classifications. The fact that transportation jobs are often 'hidden' within other industries has the potential to undermine workforce development efforts. It is essential that both employers and workers understand the transferability of transportation skills and how those skills come together within a specific job. By providing a framework for classification, the U.S. DOT will be laying the foundation for all subsequent conversations about workforce development.
2. Partner with private and public state, local, and academic sector organizations to identify transportation-related workforce needs anticipated to emerge over the next 5-10 years. The nature and scope of transportation careers must evolve to reflect both emerging technologies and inevitable demographics. U.S. DOT should also engage key private industry players like FedEx and UPS, whose businesses depend and rely on a safe and efficient transportation network, on developing the workforce of the future. Additionally, U.S. DOT should connect with regional and municipal agencies, including Metropolitan Planning Organizations, to more rapidly identify changes and challenges likely to impact workforce development.
3. Evaluate the role and partnership potential of other federal agencies – including the Departments of Labor, Energy and Education and the Environmental Protection Agency – in transportation workforce development and formally engage with them as needed. Because transportation jobs are diverse and fall across many other sectors, many areas of the federal government have a direct role (and a vested interest) in transportation workforce development; several community colleges reported existing partnerships with federal entities. Until now, participation by other federal agencies has been determined on a one-off basis with varying degrees of communication and coordination. U. S. DOT has an opportunity to improve the efficiency of future partnerships by proactively engaging other federal agencies, setting the priorities of transportation workforce development, and aligning with these entities on the best way to address shared goals through joint initiatives.
4. Conduct formalized research to assess the near-term demand for transportation sector workers to support specific transportation modes and then compare the results against an inventory of existing specialized training facilities and programs to determine our nation's readiness to support training efforts. To be adequately prepared, workers planning to specialize in a particular mode of transportation – Air, Highway, Maritime, Rail, Pipeline and Transit– require hands-on experience with

- the equipment they will encounter on the job. Based on these survey results, availability of this equipment – training ships, rail cars, airplane fuselages, etc. – is limited, and may not be enough to support workforce development demands. To determine specific equipment needs, the U.S. DOT must first evaluate holistic demand for transportation workers (even beyond the U.S. DOT’s own internal need) for each mode and determine an appropriate ratio between workers and training programs/equipment. This information then could be compared to equipment estimates (including, but not limited to, that which is available via the community college system) to determine if the inventory in place will be enough to support workforce development demands. (Further research would be necessary to determine how to best resolve identified gaps, be it through funding, partnerships, or some other means.)
5. Sponsor the development of transportation-related examples and case studies that may be utilized in General Studies courses. Many critical work skills needed within the transportation sector – financial management, project management, communications, customer service – are already being cultivated in courses offered at a majority of community colleges. Unfortunately, the applicability of these skills to transportation careers may not be intuitive to either instructors or students. By developing flexible learning materials that illustrate the relevance of key skills to transportation, the U.S. DOT can promote transportation careers directly to a student population that otherwise might not consider such opportunities. These materials could be made available for use in a broad range of curricula at the discretion of faculty, providing a subtle and easy way to introduce transportation into broader conversations. Specifically, these case studies in General Studies courses could be based on real world transportation dilemmas, such as communications, project management, customer service or financial management or other General Studies areas.
  6. Set aside a pool of funding that may be accessed by community colleges seeking to further develop their transportation-related curriculum. Work with the Departments of Education and Labor to leverage interest and resources for community college curriculum development and student support. While the U.S. DOT sponsors several grant programs related to workforce development, none has been created to address the specific needs of community colleges. Given their ability to offer a spectrum of training services (credit and non-credit, technical as well as broader skills) and their access to under-served populations to promote transportation careers, community colleges have the potential to play an even larger role in transportation workforce development – it is worth the investment to tap into that potential.
  7. Provide for a pathway, including necessary resources for students from high school to community college graduation including support for those students who wish to pursue a college or university transportation degree.
  8. U.S. DOT, working with the Departments of Education and Labor should:

- a) Develop in junior/senior high school students' sufficient interest in transportation for them to pursue transportation studies
- b) Provide some financial support for community college students to enroll in transportation-related curriculum
- c) Enhance/develop community college transportation curriculum to match to transportation career knowledge and skill needs
- d) Enhance/develop processes and financial support for community college students to transition more seamlessly to four-year school programs
- e) Enhance/develop internship/cooperative education programs provided by public and private sector transportation employers that will be rewarding for students and beneficial for employers

## Selected Bibliography

Diewald, Walter, "The Workforce Challenge: Recruiting, Training, and Retaining Qualified Workers for Transportation and Transit Agencies." TR News, No. 229 (November-December 2003) p. 27.

Wittwer, Adams and Toledo-Duran. "Report on 21st Century Workforce Development Summit." University of Wisconsin, Madison, National Center for Freight & Infrastructure Research & Education, May 2009.

Simpson, Ava. "Community College Contribution to Transportation Workforce Development." Department of Political Science, Howard University, April 17, 2007

"Recruiting and Retaining Individuals in State Transportation Agencies." NCHRP Synthesis 323, Transportation Research Board, National Research Council, Washington, DC (2003).

Rahn, Toole, et al. "European Practices in Transportation Workforce Development." US Department of Transportation, Federal Highway Administration. June 2003.

"Catalog of Transportation Education, Training and Workforce Development Programs and Resources." US Department of Transportation, Federal Highway Administration. July 2008.

Coyner, Kelley. "Education Tomorrow's Transportation Workforce: The Garrett A. Morgan Technology and Transportation Futures Program." TR News 200 (February): 17-24. 1999.

National Cooperative Highway Research Program, "Recruiting and Retaining Individuals in State Transportation Agencies." 2003, p. 5.



## Appendix A: Survey Cover Letter



One Dupont Circle,  
NW

Suite 410

Washington, DC  
20036

[www.aacc.nche.edu](http://www.aacc.nche.edu)

[T] 202-728-0200

[F] 202-833-2467

September 30, 2009

Dear Colleague:

AACC has been conducting discussions with representatives of the U.S. Department of Transportation concerning workforce development. We see a real commitment from the U.S. Department of Transportation to working cooperatively with AACC to provide for greater community college engagement in transportation workforce development efforts. An efficient, effective, and safe transportation system is vital to our nation's economic interests, provides for mobility for our citizens, and is critically important to America's ability to compete in increasingly competitive international markets.

The transportation industry is concerned about the effect of baby-boomers' retirement and the industry's ability to provide for an effective, efficient and safe transportation system in the face of ever increasing demands for transportation services. The enclosed Transportation Fact Sheet outlines these concerns, as well as opportunities for community colleges to play a larger role in preparing our students for transportation careers.

We need your help in providing specific information about what your community college is doing now—and could do—to prepare the next generation of transportation workers. To assist with this effort, we are asking you to complete a Request for Information that will help identify:

- the current and potential role for your community college in providing for transportation workforce development;
- possible transportation careers or positions that are currently being served (or would have the potential to be served) by community college courses or a degree; and
- curricula that your community college has in place, or could administer, that will prepare students for a career in transportation.

The greater the number of responses, the more powerful the story we can tell about how community colleges are serving as key partners in transportation career readiness, and what community colleges need in order to be able to increase their offerings in this field. We will also

continue to work with the U.S. Department of Transportation to pursue opportunities to develop programs that will enhance the community college contribution to transportation workforce development.

In completing the Request for Information, we ask that you think beyond the traditional engineering and freight logistics programs that you offer. As you can see from the information in the Transportation Fact Sheet, careers in the transportation industry include a large number of disciplines and represent a growing industry with millions of individuals employed in the public and private sectors.

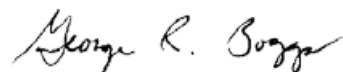
An analysis of the information we receive and a report of the results will be done to provide important insight into community college transportation programs and assets. The results will also be presented and discussed at the 2010 AACCC Workforce Development Institute, January 28-30, in St. Petersburg, Florida.

The Request for Information will take about 10 minutes to complete. If there are others at your community college who you think should also respond, please forward this message to them. We look forward to receiving your response by October 16, 2009.

We believe it is important for us to support the U.S. Department of Transportation's interest to improve transportation workforce development and provide opportunities for our students to pursue rewarding careers in an industry so vital to our nation's well-being.

We appreciate your time and effort in completing the Request for Information.

Sincerely,



George R. Boggs

President and CEO

## Appendix B: Survey

If your college includes multiple campuses, please include information on all campuses in your responses.

Previous research has identified eight education needs typical of most state Departments of Transportation. They are:

- Field Engineering
- Design Engineering
- Program Management
- Program Development
- Operations and Maintenance
- Finance and Administration
- Technology and Technical Support
- Other (e.g., Motor Vehicle Division, Driver Licensing, Ferries, Transit, etc.)

### PROGRAMS AND COURSES

1. *In which of the following areas, if any, does your college offer or plan to offer a degree program, a certificate program, or course(s)? Please include both credit and non-credit offerings.*

	Offer degree programs in this area	Offer certificate programs in this area	Offer courses in this area, but no certificate or degree	Currently planning to initiate/expand offerings in this area	No current offerings and no plans for offerings in this area
Airport Security training/planning	1	2	3	4	5
Aviation (mechanics/pilots/avionics)	1	2	3	4	5
Environmental Engineering	1	2	3	4	5
Field Engineering	1	2	3	4	5
Finance and Administration	1	2	3	4	5
GIS/GPS	1	2	3	4	5
Design Engineering	1	2	3	4	5
Operations and Maintenance	1	2	3	4	5
Program Development	1	2	3	4	5
Program Management	1	2	3	4	5
Rail Security	1	2	3	4	5
Ship Navigation	1	2	3	4	5
Technology and Technical Support	1	2	3	4	5
Traffic Engineering	1	2	3	4	5
Transit Management	1	2	3	4	5
Bus Safety	1	2	3	4	5
Rail Safety	1	2	3	4	5
Bus Security	1	2	3	4	5
Rail Security	1	2	3	4	5
Bus Management	1	2	3	4	5
Transportation Management (includes planner, real estate, economist, marketing, human resources, project/oversight management)	1	2	3	4	5

2. Does your college offer a course, certificate, or degree in which “transportation” is part of the title? (PLEASE SELECT ALL THAT APPLY)

- Yes, course(s), but not a certificate or (Please describe below)
- Yes, certificate(s) (Please describe below)
- Yes, degree(s) (Please describe below)
- No, none of the above
- If yes, what are the title(s) and general topics covered in your “transportation” course(s)/program?

3. Besides those indicated in questions 1 and 2, does your college offer any other courses, certificates, or degrees that you believe have significant transportation components? (PLEASE SELECT ALL THAT APPLY)

- Yes, course(s), but not a certificate or degree (Please describe below)
- Yes, certificate(s) (Please describe below)
- Yes, degree(s) (Please describe below)
- No, none of the above (Please describe below)

**FACILITIES/EQUIPMENT**

4. Which of the following training facilities or specialized equipment does your college own/lease, share with other entities, or expect to acquire within the next 12 months? (Please include facilities/equipment not now used for transportation-related purposes as well as those that are used for such purposes.)

(PLEASE SELECT ALL THAT APPLY IN EACH ROW)

	Our college is sole owner/lessee of this	Our college shares this with other	Our college will have this within the next 12 months	Do not have this & do not plan to have this
Aviation/flight simulators				
Driving track/skid pad				
Rail car for training				
Training ship				
Auto CAD software				
Commercial airplane fuselage				
Driving Simulation				
GPS equipment				
Survey equipment				
Synchro software				

5. Does your college own/lease or share specialized simulation equipment or facilities that you believe is/are related to transportation, other than equipment/facilities specified above? (PLEASE SELECT ONE)

- Yes (Please describe below)
- No

6. *If your college owns/leases or shares other training or specialized equipment or facilities that you believe is/are related to transportation besides those listed in the above question, please describe:*

---

---

**EXCEPTIONAL FEATURES OF YOUR PROGRAMS/FACILITIES**

7. *If there are any features of your college's transportation-related programs or facilities that you believe are exceptional or of particular significance, please describe them here.*

---

---

**Transportation PARTNERSHIPS OR COOPERATIVE EFFORTS**

8. *Is your college coordinating with any of the following on any transportation-related efforts? (PLEASE SELECT ALL THAT APPLY)*

- Other colleges
- Non-military federal government offices/agencies
- State government offices/agencies
- Municipal or county offices/agencies
- Industry/commercial organizations
- Other entities
- No, none of the above

Please provide a brief description of your coordination activities (if any) here:

---

**OTHER**

9. *If there is anything else that your college is doing that is related to transportation, please describe it here* \_\_\_\_\_

10. *Comments* \_\_\_\_\_

11. *If we have questions about your responses, whom should we contact?*

Name: \_\_\_\_\_

Title: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Telephone: (\_\_\_\_) \_\_\_\_\_ ext. \_\_\_\_\_

If you would like to print a copy of your responses, please select "Print" on your browser's "File" menu. Thank you very much for your participation in this survey.

A report presenting aggregate survey data as well as descriptions of unique facilities and programs will be made available to all survey respondents and presented at the AACC 2010 Workforce Development Institute.

## Appendix C: List of Participating Community Colleges

Note: as schools had the option of responding anonymously, not all participating community colleges are included in the list below.

Albany Technical College	East Central Technical College
Allan Hancock College	Eastern Iowa Community College District
Altamaha Technical College	Eastern Maine Community College
Amarillo College	Feather River College
Angelina College	Florida State College
Anne Arundel Community College	Frederick Community College
Arkansas State University- Newport	Galveston College
Athens Technical College	Garden City Community College
Austin Community College	Gateway Technical College
Bainbridge College	Georgia Northwestern Technical College
Beaufort County Community College	Grand Rapids Community College
Big Bend Community College	Greenville Technical College
Bismarck State College	Grossmont-Cuyamaca Community College
Blue Ridge Community College	Guilford Technical Community College
Bucks Community College	Gwinnett Technical College
Bunker Hill Community College	Hagerstown Community College
Butler County Community College	Harford Community College
Cabrillo College	Harper College
Central Community College	Harrisburg Area Community College
Central Piedmont Community College	Heart of Georgia Technical College
Chabot College	Hinds Community College
Chaffey College	Hostos Community College
Clackamas Community College	Howard Community College
Clover Park Technical College	Hudson Valley Community College
Clovis Community College	Jamestown Community College
Coconino Community College	Kentucky Community & Technical College System
College of the Albemarle	Kingsborough Community College
Collin County Community College	Kirkwood Community College
Community College of Denver	Kishwaukee College
Community College of Vermont	LaGuardia Community College
Dakota County Technical College	Lake Region State College
Dallas County Community College District	Lake-Sumter Community College
Danville Area Community College	Lanier Technical College
DeKalb Technical College	Lansing Community College
Delgado Community College	Lee College
Denmark Technical College	Linn-Benton Community College
Dyersburg State Community College	

Lurleen B. Wallach Community College	Rowan-Cabarrus Community College
Luzerne County Community College	Salish Kootenai College
Maricopa Community College	San Jose/Evergreen Community College
Metropolitan Community College	Santa Fe College
Miami Dade College	Schenectady County Community College
Middle Georgia Technical College	Seattle Community Colleges
Midlands Technical College	South Puget Sound Community College
Milwaukee Area Technical College	SouthArk Community College
Mississippi Delta Community College	Southeast Technical College
Mississippi Gulf Coast Community College	Southside Virginia Community College
Monroe Community College	Southwest Georgia Technical College
Moraine Park Technical College	Southwestern Illinois College
Motlow State Community College	Springfield Technical Community College
Moultrie Technical College	St. Petersburg College
New River Community College	Stark State College
North Georgia Technical College	Suffolk County Community College
North Idaho College	Sullivan Community College
Northern Iowa Area Community College	Technical County of the Lowcountry
Northern Virginia Community College	Texas State Technical College
Northwest Arkansas Community College	The Victoria College
Okenfenokee Technical College	Tidewater Community College
Olympic College	Union County College
Orange County Community College	Vermont Technical College
Palm Beach Community College	Virginia Highlands Community College
Palo Verde College	Wake Technical Community College
Pine Technical College	Wayne Community College
Pitt Community College	West Georgia Technical College
Prairie State College	Yakima Valley Community College
Prince George's Community College	York Technical College
Rich Mountain Community College	

## Appendix D: Scholarships

One challenge for those community colleges hoping to expand their transportation curricula is in ensuring that potential students have the interest and means to pursue a career in transportation. One way for community colleges to cultivate student interest is to publicize scholarships available to those studying transportation. In addition to local programs (such as those sponsored by local transportation employers), there are several existing nationwide scholarship opportunities, some of which have been listed below.

The Institute of Transportation Engineers and its regional chapters sponsor several scholarships for students hoping to pursue advanced education in transportation. More information is available at <http://www.ite.org/education/scholarships.asp>.

In addition to other undergraduate and graduate scholarships, the American Society of Civil Engineers awards up to \$2000 to cover tuition for students who participate in ASCE's Student Chapter. More information is available at: <http://content.asce.org/student/scholarships.html>.

Recent high school graduates as well as existing college students majoring in transportation and related fields may apply for one of the National Defense Transportation Association's scholarship programs. More information is available at: [http://www.ndtahq.com/education\\_scholarship.htm](http://www.ndtahq.com/education_scholarship.htm).

The Conference of Minority Transportation Officials' National Scholarship Programs has multiple opportunities for engineering students who are also COMTO members in good standing. In addition, select regional COMTO chapters also offer transportation-related programs. More information is available at: <http://www.comto.org/>.



## Appendix E: Internships

As illustrated in the survey results, the most robust transportation curricula include a real-world internship component. While these internships are sponsored most commonly by local private companies, there are also a number of nationwide opportunities available to community college students, including the sampling below.

FHWA's Office of Human Resources manages the Summer Transportation Internship Program for Diverse Groups, a 10-week opportunity open to groups who have been underrepresented – such as women, persons with disabilities, and students from diverse groups. More information is available at: <http://www.fhwa.dot.gov/education/STIPDG.htm>.

The Federal Career Intern Program, also through FHWA's Office of Human Resources, places students in FHWA positions to experience careers in the highway transportation field. Upon completion of the two-year program participants may be eligible for permanent placement. More information is available at: [www.fhwa.dot.gov/vacancy/career1.htm](http://www.fhwa.dot.gov/vacancy/career1.htm)

The Department of Transportation's Cooperative Education Program is open to high school and college students looking to obtain paid work while still in school. More information is available at: [http://careers.dot.gov/stu\\_coop.html](http://careers.dot.gov/stu_coop.html).

---

## References

- <sup>1</sup> *Economic Impact on Transportation*, Bureau of Transportation Statistics, [http://www.bts.gov/programs/freight\\_transportation/html/transportation.html](http://www.bts.gov/programs/freight_transportation/html/transportation.html), accessed January 17, 2010.
- <sup>2</sup> Martin, Clark, HELP WANTED - Meeting the Need for Tomorrow's Transportation Work Force Public Roads, July, August 2001, U.S. DOT, FHWA, <http://www.ffrc.gov/pubrds/julaug01/helpwanted.htm>
- <sup>3</sup> Wittwer, Adams and Toledo-Duran. "Report on 21st Century Workforce Development Summit." University of Wisconsin, Madison, National Center for Freight & Infrastructure Research & Education, May 2009.
- <sup>4</sup> American Association of Community Colleges website, <http://www.aacc.nche.edu/AboutCC/Trends/Pages/studentsatcommunitycolleges.aspx>
- <sup>5</sup> Coyner, Kelley. "Education Tomorrow's Transportation Workforce: The Garrett A. Morgan Technology and Transportation Futures Program." TR News 200 (February): 17-24. 1999.
- <sup>6</sup> National Cooperative Highway Research Program, *Recruiting and Retaining Individuals in State Transportation Agencies*, 2003, p. 5.
- <sup>7</sup> Sen, B. and M. Rossetti, Transportation research Record 1719: 2000, pp 259-266

Figure 3: Community Colleges Offering Modal Specific Transportation Degree or Certificate Programs

