

# Critical and Cross-cutting Issues

## TRB Policy and Organization Group

Fall, 2006

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## Human and Intellectual Capital: Work Force & Knowledge Management

**Date:**

11/30/06

**Lead POG Member(s):**

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Wes Lum, wes.lum@dot.ca.gov

**Specific, focused, sub-issues (phrased as questions):**

- What will transportation institutions and businesses look like in 5 years, 10 years?
- What are some of the core competencies that DOTs will need?
- What are some strategies to build a workforce that meets transportation industry needs?
- What will be the impact of outsourcing?
- What role will workforce issues have in the strategic operations of transportation organizations?
- What role will knowledge management have in the future, and what forms will it take?
- What are some of the cultural issues that affect the workforce, e.g. multiple generations with different values, different ethnicities, etc?

**Why is this a strategic issue now?**

The numbers of younger workers is fewer than in the “baby boomer” generation that is retiring or will be soon. The transportation industry expects a shortage of workers in most professional and other technical/labor areas. Recent changes in funding structure and political trends have resulted in increased reliance on contracting out some services DOTs provide. Over the next few years, DOTs will have to meet the demands of a larger and often more vocal public and other stakeholders. DOTs are likely to have to make changes in how they conduct business that will

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have a significant effect on the workforce they employ. Retention may be retention in knowledge through knowledge management rather than people.

Until some of these questions are answered, the issue of how the work gets done and who does it is likely to remain a critical concern.

### **What should POG do to highlight this issue?**

- Continue to support work force development as a critical issue in transportation.
- Continue to enhance image of transportation as a profession
- Reaffirm executive direction and commitment to participant diversity (protected classes and other diversity such a geographical) in TRB activities.
- Encourage involvement of committees in the technical areas as well as management to participate in joint sessions and workshops on this subject with a focus on practical activities that organizations can use to build workforce capabilities.
- Sponsor peer exchange on effective human resource practice.
- Hold periodic conference/workshop on workforce issues (in conjunction with professional organization meetings).
- Be a forum for exchange of ideas and efforts in human resource practice that work and why.
- Gather and disseminate information on strategies and tools that other industries have used successfully to identify and build essential workforce competencies.
- Sponsor research on strategies to identify and build workforce competencies and effective human resource planning strategies
- Draw on resources outside of TRB to bring a fresh perspective on effective workforce development strategies. Work with AASHTO, AMPO/NARC, APTA, U.S. DOT, NSF and any other who would collaboratively contribute to development of human resources.
- Open lines of information/communication with the Department of Education, Department of Labor, universities and other public and private sector organizations with interests in workforce issues
- Support comprehensive identification of different models of education and training (Committee on Education and Training).
- Encourage elevation of human resources planning as a strategic concern.
- Support coordination on activities that result in practical solutions and tools to identify and build workforce competencies.

## Institutions

**Date:**

12/1/06

**Lead POG Member(s):**

Katie Turnbull  
Barbara Martin

**Specific, focused, sub-issues (phrased as questions):**

- How have the roles, responsibilities, and organization of transportation institutions changed over the past 50 years?
  - Federal transportation agencies
  - State transportation agencies
  - Local and regional transit agencies
  - Cities and counties
  - MPOs
  - New regional agencies
  - Toll authorities
  - Airport authorities
  - Port authorities
- What changes are needed in the next 5 to 20 years to deal with critical transportation issues?
- What do customers/citizens want and expect from transportation institutions? How do we measure customer expectations? How do we know if we are meeting those expectations?
- What approaches have been used to introduce and sustain change in transportation institutions?
- Are there tools and technologies that can improve the effectiveness of transportation institutions? If so, how can they be introduced and used to ensure success?
- What can transportation institutions learn from the private sector? Are there private sector models that should be considered for application in transportation institutions?
- What approaches should transportation institutions use to improve coordination and cooperation with other transportation institutions?
- What approach should transportation institutions use to improve coordination and cooperation with private transportation entities and the private sector?

**Why is this a strategic issue now?**

Planning, funding, designing, constructing, operating, and maintaining different elements of the transportation system is the responsibility of numerous agencies at the federal, state, and local levels, as well as the private sector. Federal, state, and local transportation agencies, local and regional transit agencies, MPOs, regional organizations, toll authorities, and airport and port authorities represent some of the typical public sector agencies involved in the provisions of transportation facilities and services. The roles and responsibilities of these agencies have changed significantly over the past 50 years, and are likely to continue to evolve in the future. How institutions respond to the ongoing challenges of increasing demands from all user groups, limited resources from traditional funding sources, and need to establish new partnerships with other public agencies and the private sector is critical to the economic health and quality of life in the U.S. In the future, transportation agencies will need to be more pro-active, nimble, and customer driven, providing value added services. The POG has an important role to play in advancing the discussion of these issues within TRB and with other organizations, as well as

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seeking sponsorship for needed research and facilitating the dissemination of research results to improve the state-of-the-practice.

### **What should POG do to highlight this issue?**

The POG should undertake the following activities to help ensure that transportation agencies continue leadership roles at the federal, state, and local level in providing the facilities and services needed to sustain the economic vitality and quality-of-life of the country.

- Continue to organize and conduct cross-cutting issue sessions on transportation institutions at TRB Annual Meetings and mid-year meetings. Document the results of these presentations and discussions in e-sessions or summary documents.
- Conduct a call for papers for the 2008 Annual meeting on institutional issues and hold paper podium or poster session, in addition to cross-cutting speaker session.
- Coordinate a TR New theme issue on institutional issues and author selected articles.
- Work with committees and other groups sponsoring specialty conferences and workshops to promote the inclusion of institutional related breakout sessions, topics, and speakers.
- Plan and hold a specialty conference on transportation institutions to be held in late 2007 or early 2008. Identify potential funding sources for the conference and the venue, develop program, and secure co-sponsors. One of the outcomes of the conference would be the identification of key research needs. Identify the top two to four research topics related to institutional issues, develop problem statements on these topics, and submit to NCHRP, TCRP, and other potential funding sources.
- Conduct an outreach effort with other appropriate organizations (AASHTO, APTA, AMPO, NARC) to foster additional discussion of institutional issues and to seek sponsorship of priority research projects, technology transfer, and implementation.

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## Finance

**Date:**

11/13/06

**Lead POG Member(s):** Mary.Tischer@vdot.virginia.gov

Mary Lynn Tischer,

Congressional action in creating the National Surface Transportation Infrastructure Financing Commission and the National Surface Transportation Policy and Revenue Study Commission reflect increasing concern for the viability of current taxes and fees as sustainable revenue sources for highways and public transportation. Additionally, without a dedicated revenue source for rail, the long term ability to maintain and improve this system is in doubt.

Highway, barge and aviation fees have long been user based and there is concern that such a financing structure may be eroding. Special Report 285 notes (p. 2) "The growing cost of maintaining acceptable service under present funding and pricing practices may at some point compel reforms that would increase efficiency."

The country's continued economic growth resulting in doubling of freight movement over the next fifteen years and increased personal travel as well as the age of the infrastructure create increasing pressure on the transportation system. Revenues can no longer support current or future transportation infrastructure investment needs.

An area of critical importance relates to the need for multi-state/regional planning and project finance. The ability of our transportation systems to support the economy of the future will need to consider corridors that span multiple states and jurisdictions, especially for goods movement and intercity passenger travel. The mechanisms to address such needs may include private interests and partnerships as one approach, but also will require a foundation of public planning and project definition at the state and local levels.

Financing has important relationships with pricing, investment, and equity that are often confused in the minds of planners as well as decision makers. ABE20 has posted a good one-page statement by Chris Mann and John Merriss which can be found at <http://transportationeconomics.org/critlss5.aspx>. It notes the conflicting trends of more use of direct user charges such as tolls, on the one hand, versus more diffuse taxation through sales and other general taxes on the other, and mentions evaluation of financing instruments considering impacts on equity, efficiency (encouraging over- or under use), investment biases, and land use patterns.

Statements on pricing and equity are still under preparation by Steve Fitzroy's joint subcommittee, and these should be ready for posting soon.

**Specific, focused, sub-issues:**

- What are the criteria for a sound financing structure for transportation in the United States? Are the criteria different for different transportation modes?
- At the national level, what kinds of financial performance measures should be tracked in the transportation sector?
- How well does the current financing structure meet each of these criteria?
- What changes should be considered to better meet these criteria?
- What are the major obstacles to developing a more sound financial structure for transportation?
- What are the issues surrounding use of ( potential and pros and cons of) each of the following financing tools:

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- Federal and state gasoline taxes
- State and local sales taxes
- Public private partnerships
- Tolling
- Congestion pricing
- Mileage-based pricing
- General Fund transfers
- Specialized fees/
- Other fees
- What can and cannot be accomplished by the private sector and/or public private partnerships?
- With respect to public private partnerships: How can we make sure the public isn't being "taken to the cleaners"? How can we maximize their effectiveness? How do we make them work on an interconnected national highway system, etc.? How do we ensure that the public still has oversight or involvement in the projects?

### **Why is this a Critical and Cross-Cutting issue now? )**

The Highway Trust fund faces a deficit as early as 2009. Highway and Transit Account balances versus obligation limitations indicate the current program is not sustainable through the reauthorization period. .

Two national commissions were identified in SAFETEA-Lu indicating Congressional concern with the viability of revenues.

AASHTO's most recent Bottom Line Report estimated a required annual investment of \$92.0 billion by all levels of government for highways and bridges to maintain condition and performance of the system over 20 years and an annual investment of \$125.6 billion would be necessary to improve the system

A transit system capital investment of \$19 billion would be required between 2004 and 2009 from all levels of government just to maintain the existing condition and service performance of the nation's transit systems and an annual capital investment of \$44 billion would be required to improve the current service performance.

With respect to freight rail, an investment of \$175 to \$195 billion over the next 20 years would be needed to maintain rail's share of projected total freight movement. "Given the constraints on the rail industry's ability to generate revenue and raise capital, an estimated \$53 billion of the total — about \$2.6 to \$4.0 billion annually — must come from other sources, including the public sector "(FREIGHT–RAIL BOTTOM LINE REPORT 5)

The financing of publicly provided transportation infrastructure does not match the needs.

### **What should POG do to highlight this issue?**

Serve on panels for NCHRP, TCRP and other research programs  
Develop Research syntheses on research  
Facilitate the dissemination of research results to key stakeholders  
Develop sessions for TRB Annual Meeting  
Develop sessions for TRB mid year meetings  
Develop workshops associated with Annual Meetings  
Develop specialty conferences  
Prepare proceedings from specialty conferences  
Assist with developing sessions at other professional conferences  
Prepare articles for *TRNews*

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Develop theme issues of *TRNews*  
Prepare articles for other publications

## Data and Information Assets

**Date:**  
9/5/06

**Lead POG Member(s):**  
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Should data be treated as an “asset” by transportation agencies? According to accepted definitions, transportation data are an asset. It has market value (that which could be converted to cash). It is not easily replaceable without cost, skills, time, resources or a combination.

### **Why is this a strategic issue now?**

The array of data that the transportation data community is being called on to provide to policy makers and transportation planners expands continuously. Furthermore, each new legislative cycle establishes new reporting requirements or expanded opportunities that add to the set of transportation data needs. This market expansion is taking place at a time when transportation agencies are facing severe budget constraints that negatively impact data acquisition, integration, and distribution activities. Given the fact the transportation data and information is more “in demand” than “in supply”, the market value of transportation data is increasing at a substantial rate. Like other assets, transportation data and information need to be effectively managed. Strategic management of data and information is a key to getting the best return on every dollar spent to build and maintain transportation infrastructure. Left unmanaged, the value of the data asset will degrade over time and the overall cost of doing business at the federal, state, or local levels will increase.

### **Specific, Focused, Sub-Issues (phrased as questions)**

How does one value transportation data and information?

- Which raises the question: Which data are assets? If some data are an asset, are other data now a liability? Which data?

For the defined set of data that are an asset:

- How are these data currently being managed? At what levels of government? By what functions? At what cost?
- What are immediate priorities in addressing the potential degradation of transportation data assets? What are potential funding approaches for addresses these priorities?
- What improvements or changes should (could) be made in how these data are acquired, integrated, or distributed?
- Is there a role for the private sector in these activities? At what benefit/ cost to the public interest?
- What are innovative solutions for filling gaps between demand for transportation data and supply of transportation data?
- How can the providers of transportation better communicate with data users (policy makers / planners) about gaps between demand for transportation data and supply of transportation data?

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- What are research and development opportunities in this area – data acquisition, data integration, and data distribution?

### **What should POG do to highlight this issue?**

- Raise awareness of issue in pertinent organizations (AASHTO, APTA, DOT)
- Develop session for TRB annual meetings
- Peer exchange among federal, state, and local agencies

## Transportation and Sustainability

**Date:**

11/26/06

**Lead POG Member(s):**

Cindy Burbank, cindy.burbank@comcast.net

**Specific, focused, sub-issues (phrased as questions):**

- What do we need to do in transportation to contribute to a sustainable future?
- What are the key dimensions of “sustainability” for the transportation sector? Environmental sustainability? Economic/financial sustainability? Other?
- How should each key dimension of sustainability be measured?
- To improve transportation sustainability, what kinds of research, training, information transfer, etc., are needed?

**Why is this a critical and cross-cutting issue now?**

Environmental sustainability has been a significant concern for several decades, with particular concern about the environmental sustainability of current transportation systems. In recent years, concerns about global climate change have grown in intensity and urgency, including concerns about the impact of transportation on global climate. Despite decades of discussion, however, there is a lack of consensus on whether and how transportation should change to be environmentally sustainable. The lack of consensus impedes decision making at all levels, from international transportation policies to national transportation programs, to individual transportation projects.

In recent years, concerns have also emerged about the financial/economic sustainability of current transportation systems. In the U.S., the gap between surface transportation needs and financing is substantial and continues to grow, as documented in USDOT’s biannual “Conditions and Performance Report” to Congress. The lack of a sustainable transportation financing framework has increasingly adverse implications for all aspects of transportation, from aging infrastructure to congestion and reliability.

TRB could make a substantial contribution by helping transportation and non-transportation constituencies agree on key research questions, and ensuring the necessary research is carried out and disseminated across multiple stakeholders.

**What should POG do to highlight this issue?** While there are a large number of potential POG activities, here are 3 leading suggestions:

- With respect to environmental sustainability for transportation: Seek USDOT support for a synthesis of sustainability research, scans, commentaries, etc., over the past decade. Frame and conduct the synthesis in collaboration with environmental stakeholders (e.g., through STPP). Based on the synthesis, use TRB venues to identify common ground among transportation and environmental stakeholders. Also, use the synthesis to identify research gaps and critical differences among stakeholder views of sustainability.
- With respect to financial sustainability for transportation, monitor the results of the SAFETEA-LU Commission on the Future of Transportation. Ask relevant POG and other TRB Committees to review the conclusions and recommendations of the Commission, with particular attention to research needs relating to transportation finance.
- Set aside time for POG and other TRB discussions about the nexus between environmental and financial sustainability for transportation. For example, is there

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potential compatibility between the needs for environmental and financial sustainability?  
What kind of research could be helpful in exploring the relationship between environmental and financial sustainability?

## Changing Demographics

**Date:**

11/10/06

**Lead POG Member(s):**

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Alan E. Pisarski, alanpisarski@alanpisarski.com

**Specific, focused, sub-issues (phrased as questions):**

- What are the significant details of key trends in demographics with the greatest implications for transportation?
- What will be the main sources of workers in the future and how will it vary from the present and how will it affect travel patterns?
- What implications will increases in immigrant populations and workers have on commuting patterns and other travel patterns?
- What kinds of transportation infrastructure and service changes are posed by the travel activities of an aging population?
- What kinds of safety issues will be posed by an aging population's travel activities including more older workers commuting in peak periods?
- How will greater roles for women in the work force change travel patterns?
- How will tourism and long distance travel be affected by the demographic trends?
- How will the changing demography affect national, metropolitan, rural settlement patterns and how will those changes interact with travel patterns?
- Will changing family size and family structure trends impact significantly on travel patterns and in what ways?
- How will changing vehicle ownership patterns affect the travel of varying racial and ethnic groups?
- How will rising affluence and the resulting increased value of time of the population affect travel demand in all of its aspects?
- What are the equity issues of the impacts of fuel prices?

**Why is this a strategic issue now?**

While demographic patterns often move very slowly many of the patterns we are seeing are at the stages where dramatic shifts are imminent. (the number of persons in their fifties increased by 50% in the last ten years; 1995-2005) The leading edge of the baby boom bubble will be reaching 65 by 2010; national travel patterns will never be the same again. In addition the surge of immigrant workers is distorting the demographic structure significantly, calling into question Census statistical products and their utility for transportation planning.

Many of these changes, including particularly where will the population be located, will have immense bearing on infrastructure needs and service provision. Part of the change is expected to be in greater flexibility in work schedules of the population as more disparate populations participate in the labor force. The ways in which that flexibility in hours and days worked affects system requirements is unknown at this stage.

The preservation of national competitiveness will be sharply affected by the ease with which people and goods can move to, in, and out of our great metropolitan areas which are our economic engines. One-third of the national population is living in metropolitan areas over 5 million and roughly another third is in metropolitan areas over a million. The increased trip lengths such large areas engender, including rural access to decentralizing suburban jobs, will have

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substantial impacts on congestion, energy and environmental factors and as a consequence public policy in these areas.

### **What should POG do to highlight this issue?**

Potential POG actions include:

- Interaction with sections and committees of the POG to ensure their awareness and focus on this topic i.e. integration of the topic into their considerations.
- Identification of research needs in this area, including conferences to develop a research agenda.
- Broader dissemination of information and research in this area to all elements of the TRB including joint efforts with those which have direct interests in this area.
- Development of TRB sessions in the annual and mid-year meetings to more broadly expand understanding of the scope of these concerns.
- Designation of lead actors/groups in the POG to carry this issue forward

## Global Trade and Competition

**Date:**

11/26/06

**Lead POG Member(s):**

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**Specific, focused, sub-issues (phrased as questions):**

- What are the mega trends in global trade and competition over the next 20 years?
- What are the implications of these trends for North America, and the United States in particular?
- What impacts has NAFTA had on North America's global competitiveness and how can the lessons learned under NAFTA be applied to future trade opportunities?
- Based on these trends and their implications, what changes should be considered in transportation – policy changes? Organizational changes? Data changes? Research and education changes? Workforce changes?

**Why is this a Critical and Cross-Cutting issue now?**

Transportation must adapt to an increasingly global economy, in which manufacturing, services, and trade transcend national boundaries. Major changes include the growth of NAFTA trade (which is growing much faster than the US economy) and the growth of China and India in international trade (which may well eclipse North America and Europe in the coming decades). Global competition is already:

- creating new trade corridors within and between countries;
- shifting infrastructure requirements in terms of location and mode;
- creating demand for new operational efficiencies for both passengers and freight at national border crossings;
- intensifying the need for more efficient and reliable transportation operations;
- increasing the volume of transportation movements, both passenger and freight;
- increasing the volume and mix of goods and people who must meet security screening through seaports, land border points, and airports;
- generating environmental issues at transportation nodes (esp. seaports and terminals) and links (esp. new trade corridors); and
- generating the need for re-examining governmental financing of transportation, in response to increased funding requirements, new trade corridors, modal shifts, and the need for multi-state or multi-national transportation planning and investment.

**What should POG do to highlight this issue?** In priority order, the top 3 things the POG should do:

- Ask each POG Committee to identify the major implications of global trade for the subject of their committee, together with the associated research needs.
- In concert with TRB international committees, sponsor a specialty conference in late 2007 on the implications of global trade for transportation, focusing on these questions:

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"What will be the top 5 impacts of global trade on transportation over the next 10 years? The next 20 years? What are the top 5 research questions relating to global trade and transportation?" Then seek sponsors for pursuing the top 5 research questions from the above specialty conference.

- Sponsor a "Red Meat" session at the 2008 or 2009 TRB Annual Meeting, focused on the question: "What does the transportation sector need to do differently to meet emerging global trade needs?"

## Emergency Preparedness

**Date:**

11/3/06

**Lead POG Member:**

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**Specific, focused, sub-issues (phrased as questions):**

- What are appropriate roles and responsibilities for transportation agencies in preparing, responding, and recovering from natural and man-made disasters?
- How do transportation agencies interact, coordinate, and communicate with other agencies, including DHS, TSA, FBI, etc., as well as other local agencies. Are there good models for emergency preparedness and command during emergencies?
- What differences are there in the appropriate approaches based on the type of emergency?
- What approaches are needed to address the transportation needs of special groups (elderly, disabled, women, children, etc.)?
- What methods should be used to communicate with the public about the transportation system before, during, and after an emergency?
- Are there tools and technologies that can be used to assist with preparing, responding, and recovering from emergencies? How can these tools and technologies be introduced and sustained in transportation agencies?
- What is the role of Transportation agencies in support of the National Response Plan (NRP) and the National Infrastructure Protection Plan (NIPP)?

**Why is this a strategic issue now?**

Protecting our nation's critical infrastructure and key resources (CI/KR) is vital to our national security, of which Transportation is a Critical Sector. There are challenging requirements for transportation agencies/organizations for determining, understanding, and implementing solutions in protecting the nation's critical transportation infrastructure. The National Response Plan (NRP) and National Infrastructure Protection Plan (NIPP) provide direction and requirements for transportation agency implementation, including the development of Emergency Support Function (ESFs) for Federal, State and Local transportation agencies. Transportation agency/organization expectations are not yet matched by the capability. This gap between expectation and capability increases risk and calls for the best strategic direction and R&D available in reaching agency capability. As an example, to achieve unified command with other organizations responding to an emergency, transportation agencies need to incorporate the Incident Command System into planning, training, and cooperative exercises. Specific issues such as implementing the National Incident Management System (NIMS) / Incident Command System (ICS), or introducing innovative tools and technologies may be meaningfully addressed in the context of the strategic issue of meeting expected emergency response functions.

**What should POG do to highlight this issue?**

To highlight this strategic issue, the Policy and Organization Group can first draw upon the diverse institutional and interdisciplinary competencies required for effective Unified Command during an emergency. This includes transportation insight into capabilities and constraints at all levels of government and the private sector. Also, critical Research and Development needs to be identified. Building on this foundation, a brief can be prepared on the role of transportation to all critical systems. The brief can be shared among the TRB community, and can help inform transportation, public safety and other emergency response organizations. The brief can be

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configured in a variety of formats depending on the audience, applied at each step in the plan, train and exercise process, and shared with all involved in emergency response.