

# **Triennial Strategic Plan\***

## **Intermodal Freight Transport Committee ATO45**

Presented to the

Transportation Research Board  
Technical Activities Division  
Freight Systems Group

March 31, 2006

\*Steve Kale, Chair of the Intermodal Freight Transport Committee from 2000 to 2006, is the principal author of this document. Harold Cerveny, incoming chair of the committee, Arno Hart, committee co-vice chair, and Ted Dahlburg, committee secretary, contributed to portions of the document. Any errors or omissions are those of the principal author.

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## Introduction

The Intermodal Freight Transport Committee, also sometimes referenced by the alphanumeric code ATO45, is one of 10 committees, two task forces, one roundtable, and one conference committee comprising the Transportation Research Board's (TRB) Freight Systems Group ([http://trb.org/directory/comm\\_search.asp?sCode=AT](http://trb.org/directory/comm_search.asp?sCode=AT)). Established in the early 1980s, the Intermodal Freight Committee focuses on a wide variety of intermodal matters reflecting the increased visibility and importance of intermodal connections in general and freight in particular. Committee members come from academia, government (federal, state, and regional), the private sector, and transportation institutes in the United States, Australia, and Europe.

This purpose of this report is review and summarize the Intermodal Freight Transport Committee's activities over the past few years, identify committee goals and objectives, recommend changes where needed and outline proposed future activities, develop and verify research problem statements, and discuss the relationship between the committee's activities and TRB critical and cross cutting issues. In so doing, the committee is addressing TRB's requirements for periodic committee self-review, currently known as the Triennial Strategic Plan (TSP) evaluation, as specified in TRB's 2006 Technical Activities Leadership Guide (<http://gulliver.trb.org/publications/dva/DivAGuide.pdf>).

To address TRB's requirements for the ATO45 TSP, this report includes sections on the following topics:

- Activities since the last TSP,
- Critical and cross-cutting Issues,
- Justification for retaining the committee,
- Committee scope,
- Committee organization,
- Committee membership,
- Committee goals and objectives for the next triennium, and
- Planned committee activities.

The report ends with several appendices showing selected committee products developed over the last few years.

## Activities since the Last TSP

The committee's last TSP, formerly called a Triennial Self-Evaluation (TSE), was submitted to TRB on March 1, 2001 ([http://www.wilbursmith.com/at045/PDFs/TSE\\_final\\_1.pdf](http://www.wilbursmith.com/at045/PDFs/TSE_final_1.pdf)). Since then, the committee has engaged in a wide variety of activities, some but not all of which are reviewed in this report. For the most part, this report focuses on committee activities from 2002 to the present.

In the year 2000, the committee developed a strategic planning concept to give structure to ATO45 activities. In 2004, the committee expanded the concept into a strategic plan

document. The strategic plan outlines committee strengths, weaknesses, opportunities, and threats; identifies the committee's organizational structure, and identifies the committee's mission, goals, strategies, and action agenda. The strategic plan has been an invaluable tool for providing structure to the committee's work, and both directs and reflects the committee's future and past activities. As part of the development for this TSP, the committee has reviewed and updated its strategic plan, which is attached as Appendix 1 of this document.

Since the last TSP (TSE), members of the Intermodal Freight Transport Committee have

- Reviewed papers and co-sponsored, organized, and chaired sessions for TRB annual meetings and summer meetings,
- Sponsored papers for publication in the Transportation Research Record,
- Maintained and enhanced a committee web site,
- Participated in liaison activities with other TRB committees,
- Submitted research problem statements,
- Served on NCHRP panels,
- Established membership guidelines, and
- Developed and used committee performance measures.

The following sections provide additional detail for each of these activities.

### Annual and Summer Meetings

Every year by May 1, the committee begins its preparations for the annual meeting by preparing a Call for Papers, the most recent of which was prepared for the January 2006 meeting (<http://gulliver.trb.org/am/cfp/2006/AT045.pdf>). Every year between May 1 and October 1 during the last few years, ATO45 members have devoted countless hours working with other TRB members to organize annual meeting sessions, identify speakers and session moderators, and report this information to TRB staff. Between October 1 and the annual meeting in January, ATO45 members have worked with speakers, session moderators, and others to coordinate presentations at annual meeting sessions.

Since 2002, the Intermodal Freight Transport Committee has co-sponsored five to eight workshops and speaker (lectern) and poster sessions annually (Table 1). Additionally, as part of the Freight Systems Group, the committee is involved with co-sponsoring the marine and intermodal forum and other sessions.

Another activity requiring committee involvement is the annual process for reviewing papers submitted for presentation at the January TRB meeting and for possible publication in the *Transportation Research Record*. Since 2002, the Intermodal Freight Transport committee annually has reviewed five to eight papers, each of which has received at least three reviews and up to seven reviews. Aside from annual committee meetings in January, this activity has engaged more committee members than any other single committee activity. Reviewers typically have recommended three to six papers for presentation and one to three papers for publication annually.

From 2002 to 2005, the committee participated in TRB summer meetings in Providence, Portland (OR), Park City (UT), and Boston. Committee involvement has included helping develop meeting sessions, working jointly with other freight committees to hold a summer business meeting, and participating in various liaison activities.

### Paper Review and Publication

Since 2002, the committee has recommended papers that were published in the following issues of the *Transportation Research Record*:

Number 1790 (2002): *Freight Transportation* (two ATO45-recommended papers),  
Number 1833 (2003): *Freight Policy, Economics, and Logistics; Truck Transportation* (one ATO45-recommended paper),  
Number 1873 (2004): *Intermodal Freight Transportation; Freight Transportation Planning* (three ATO45-recommended papers), and  
Number 1906 (2005): *Freight Analysis, Evaluation, and Modeling* (two ATO45-recommended papers).

In addition to the papers noted above, papers written or co-written by ATO45 members have been recommended by other TRB committees for publication in the *Transportation Research Record*. These include papers published in the following issues:

- Number 1820 (2003)--*Water Transportation, Ports, and International Trade*,
- Number 1839 (2003)--*Transportation Finance, Economics, and Economic Development*,
- Number 1858 (2003)--*Transportation Planning and Analysis*,
- Number 1873 (2004)--*Intermodal Freight Transportation; Freight Transportation Planning*,
- Number 1924 (2005)--*Management and Public Policy*, and
- Number 1931 (2005)--*Planning and Analysis*.

### Committee Web Site

The committee established a web site in the year 2000, and has enhanced and maintained the web site regularly since then. The web site includes the following pages: home, people, membership guidelines, committee strategic plan, links, research, meetings, performance measures, triennial strategic plan, and newsletter. Currently, the committee strives to update its web site a minimum of one or two times yearly, and at the time of submitting this TSP, is exploring options for alternatives to the current URL (<http://www.wilbursmith.com/at045/>) for accessing the web site.

### Liaison Activities

The committee has identified a number of freight-related and other TRB activities with which to engage in liaison activities. This includes attending business meetings of other committees at the TRB annual and summer meetings. To facilitate communication with other committees and groups, the committee twice annually prepares "Talking Points," a one-page summary of committee activities.

**Table 1**

**ATO45 Sponsored and Co-Sponsored Annual Meeting Sessions, 2002-2006**

<b>2002</b>	Freight Issues, Needs, and Responses: A Decade of Experiences after ISTEA
	a. Freight Trends and Issues
	b. Assessing Freight System Needs
	c. Evolving State Department of Transportation Freight Planning Initiatives
	d. Freight and Public Involvement
	e. Freight Transportation and Economic Development
	f. Public- and Private-Sector Responses
	Watching This Space: A Dramatic Year in European Freight and Intermodal Transportation—Sustainability and Liberalization
	Intermodal Freight Movement along Trade Corridors
<b>2003</b>	Global Freight Data Standards in an E-Business World
	Incorporating Freight into Statewide and Metropolitan Planning
	Outreach to the Public on Freight Issues, Benefits, and Needs
	Short-Haul Intermodal Rail: Options and Opportunities
	Trends in the Security and Efficiency of Container Movements
<b>2004</b>	Alternative Freight Capacity: Opportunities and Barriers
	Focus on Freight Systems, Part 1: Where is Freight Demand Going?
	Focus on Freight Systems, Part 2: How Will Carriers Respond?
	Intermodal Terminal Operations: Challenges and Opportunities
	Freight Systems and Marine Transportation
	Freight as a Good Neighbor, Part 1 and Part 2
<b>2005</b>	Cargo Tracking for Supply Chain Integration, Part 1, Private Sector's Challenges
	Cargo Tracking for Supply Chain Integration, Part 3, Current and Future Technology
	Cooperative Efforts Within Federal Government Agencies Toward Pipeline Research
	Freight and Marine Transportation Research
	Global Supply Chain, Part 1: How Will Changing Trade Patterns Affect Ports of Entry
	Global Supply Chain, Part 4: Linking Freight to Public Policy
	Incorporating Freight into Statewide Transportation Planning and Programming
	Intermodal Freight Facilities and Operations
<b>2006</b>	Effective Integration of Freight Policy, Planning, and Programming Activities into Transportation Programs
	Freight Systems Capacity Issues
	Part 1, Impact of Pricing on Congestion
	Part 2, Urban Highway Bottlenecks
	Part 3, Supply Chain Structure and Restructuring
	Part 4, Emerging Operations Strategies as a Response to Congestion
	Integrating Freight Facilities with Communities and Economic Development

## Research Problem Statements

In May 2001, Tina Casgar, Chair of TRB's Freight Systems Group (formerly the Multimodal Freight Transportation Section), asked freight committees and task forces to develop research problem statements that might be used in a proposed Cooperative Freight Research Program. The purpose was to bring critical issues in freight transportation to the attention of freight researchers, and to serve as a seedbed for further discussion and analysis from a cross-section of freight practitioners. In response to Ms. Casgar's request, the Intermodal Freight Transport Committee submitted seven problem statements shown in TRB's Transportation Research Circular EC048 (<http://trb.org/publications/circulars/ec048.pdf>) published in December 2002, and on the committee's web page.

As part of the work for developing this TSP, committee members were asked to develop new problem statements, and authors of committee-sponsored statements in Research Circular EC048 were asked to review and update existing problem statements as warranted. The results of these requests were that two new problem statements were submitted and two existing problem statements were updated. These are shown in Appendix 2 of this document and will be included on the committee's web site at its next update.

## Working Paper on Research Ideas

At TRB's 2003 summer meeting in Portland, Oregon, the Intermodal Freight Transport Committee discussed the need for more focused attention and a more thorough definition of research needs on freight intermodalism. The expectation was that a broad roster of research ideas related to freight in general and to intermodal freight in particular would result. To this end the committee developed a working paper which was first presented at TRB's 2004 annual meeting in Washington, D.C., revised and presented at the 2004 summer meeting in Park City, Utah, and revised and presented at the 2005 annual meeting in Washington, D.C. The working paper is available for review on the committee's web page at [http://www.wilbursmith.com/at045/PDFs/Working\\_Paper\\_01\\_05.pdf](http://www.wilbursmith.com/at045/PDFs/Working_Paper_01_05.pdf).

## NCHRP Panels

Several members of the Intermodal Freight Transport Committee have served on panels for National Cooperative Highway Research Program projects. These include:

*Integrating Freight Facilities and Operations with Community Goals* (NCHRP Synthesis #320),

Rail Freight Solutions to Roadway Congestion (Project 8-42),  
Guidebook for Freight Policy, Planning, and Programming in Small and Mid-sized Metropolitan Areas (Project 8-47), and

Best Practices on Integration of Freight Movement Considerations into State and Local Planning and Project Selection Processes (Project 8-53).

## Membership Guidelines

In January 2002, the committee formally adopted membership guidelines which identify TRB guidelines on appointments to committees; AT045 guidelines on professional background, professional contributions, and contributions to committee activities; the method of selecting committee members; and duties of committee members. In February 2005, the committee updated the guidelines, which can be reviewed at [http://www.wilbursmith.com/at045/PDFs/membership\\_guidelines\\_2\\_2005.pdf](http://www.wilbursmith.com/at045/PDFs/membership_guidelines_2_2005.pdf).

## Performance Measures

To assist with meeting its mission and addressing goals set out in its strategic plan, the Intermodal Freight Transport Committee in 2002 established a set of performance measures (Table 2). Each year at its annual meeting in January, the committee reports its progress in meeting the performance measures, and when needed, modifies its activities or its measures to better reflect changing priorities and resource availability.

**Table 2**  
**Performance Measures,**  
**Intermodal Freight Transport Committee**

<b>Category</b>	<b>Measure</b>
<b><i>General</i></b>	Maintain full (or nearly full) committee membership
	Rotate the committee membership every three years in concert with TRB and ATO45 membership guidelines.
	Involve 80 percent of members in at least one committee or TRB activity annually.
	Have at least one-half of members at the committee meetings during the TRB annual meeting and/or TRB summer meeting.
	Update the lists of committee members and friends at least once annually.
<b><i>Communications</i></b>	Update the committee web site annually.
	Update the committee web site links to external organizations annually.
<b><i>Liaison</i></b>	Participate in the activities of at least two external organizations annually.
	Participate in the business meetings of at least five other committees at the TRB annual meeting.
	Participate in the business meetings of at least three other committees at the TRB summer meeting.
	Update the ATO45 Talking Points twice annually for ATO45 members to use at the meetings of other committees at the TRB annual and summer meetings as well as at meetings of other organizations.
<b><i>Meetings</i></b>	Sponsor or co-sponsor at least five sessions at the TRB annual meeting.
	Make at least two member-generated presentations at the annual meeting.
<b><i>Research</i></b>	Accomplish at least three reviews per paper assigned to the ATO45 committee to review for the TRB annual meeting.
	Sponsor/recommend at least one paper annually for TRB publication.
	Serve on the advisory panel for at least one NCHRP project.

## Critical and Cross-Cutting Issues

### Critical Issues

The Transportation Research Board periodically identifies critical issues in transportation and their likely impact on the nation's economy and quality of life. The most recent *Critical Issues* document was issued in January 2006 and is available on the TRB web site at: <http://trb.org/publications/general/CriticalIssues06.pdf>. Review of the critical issues suggests that each has one or more possible intermodal freight themes which could fall under the scope of the Intermodal Freight Transport Committee. Table 3 illustrates possible intermodal freight themes for each critical issue.

**Table 3**

### **Intermodal Freight Themes for Critical Issues Identified by the Transportation Research Board**

<b>Critical Issue</b>	<b>Intermodal Freight Theme</b>
Congestion--increasingly congested facilities across all modes	How should decisions about investments in intermodal freight facilities and landside connections be made in the nation's major cargo hubs in view of increasing congestion?
Emergencies--vulnerability to terrorist strikes and natural disasters	To what extent should "redundant" intermodal freight facilities be incorporated into a transportation system faced with potential terrorist strikes and natural disasters? How should locational decisions be made for siting such facilities?
Energy and Environment—extraordinary challenges	What criteria and methodologies can be used to identify locations where energy savings from intermodal freight facilities are maximized while adverse environmental impacts are minimized?
Equity—burdens on the disadvantaged	What tools and procedures can be used to minimize the likelihood of developing incompatible land uses adjacent to intermodal freight facilities? How can adverse impacts on disadvantaged populations in nearby neighborhoods be minimized with increasing volumes of traffic through intermodal freight facilities?
Finance—inadequate revenues	Which types of intermodal freight facilities are experiencing the greatest financing challenges? What factors characterize financing challenges by facility type? What are solutions to the challenges?
Human and Intellectual Capital—inadequate investment in innovation	What skills are needed to plan and operate intermodal freight facilities, and to what extent are these skills acquired through formal education and training versus on the job?
Infrastructure: enormous, aging capital stock to maintain	What criteria and methodologies should and can be used to analyze the condition and performance of intermodal freight facilities over time? What are the projected intermodal freight infrastructure needs in the U.S. in 2010, 2020, and 2030?
Institutions—20 <sup>th</sup> century institutions mismatched to 21 <sup>st</sup> century missions	What are the most significant institutional barriers to efficient and politically acceptable intermodal freight movements and what are best practices to reduce adverse impacts of current and anticipated institutional barriers to such movements?
Safety—lost leadership in road safety	What strategies have been and can be deployed to address safety concerns on connector roads to and from intermodal facilities? How do safety issues on intermodal connector roads differ from safety issues on other roads?

A review of the Intermodal Freight Transport Committee's millennium paper, published in 1999 (<http://gulliver.trb.org/publications/millennium/00061.pdf>), suggests that the committee has been addressing some of the critical issues for a number of years. For example, the committee's millennium paper partially addresses the critical issues pertaining to financing, infrastructure, and institutions.

### Cross-Cutting Issues

In its 2006 *Leadership Guide* (<http://gulliver.trb.org/publications/dva/DivAGuide.pdf>), TRB's Technical Activities Council has identified a number of cross-cutting issues, some of which are similar to the critical issues shown in Table 3. The council's cross-cutting issues are as follows:

- Capacity (or congestion) of the transportation system: what does the future hold,
- Getting rid of the seams (integrating modes and institutions for a more seamless transportation system),
- Matching transportation systems to the communities they serve (context sensitivity, land use/sprawl, demographics, environmental justice, economic impacts, etc.)
- The growing shortage of transportation personnel: outlook, implications, experiences, and actions
- Making transportation investment decisions – art or science,
- Transportation and energy: options for the long term,
- Balancing environmental and transportation goals,
- Moving the goods: giving freight the attention it deserves,
- Show me the money: meeting the long term funding needs for transportation,
- Safety: future options that could make a real difference,
- Security: where do we go from here, and
- Renewing the aging transportation infrastructure.

The Technical Activities Council intends for TRB standing committees to use critical and cross-cutting issues in moving forward with TRB activities, including the development of research problem statements, specialty conferences, and annual meeting calls for papers, spot light themes, and sessions.

The Intermodal Freight Transport Committee has incorporated these issues in a number of its activities to date. For example, in preparation for the 2006 TRB annual meeting, the committee's call for papers addressed critical issues dealing with congestion, emergencies, finance, and institutions, as well as cross-cutting issues dealing with capacity, seamless transportation, investment decisions, goods movement, and security. At the 2006 annual meeting, the committee co-sponsored sessions addressing the critical issues of congestion and equity, as well as cross-cutting issues dealing with capacity, community impacts, and goods movement.

The committee intends to continue emphasizing critical and cross-cutting issues in its future activities. To help implement this intent, the committee's most recent revision its strategic plan (see Appendix 1) includes language explicitly stating the importance of addressing

critical and cross-cutting issues. Additionally, should TRB direct its standing committees to develop successor documents to the millennium papers, information from Table 3 and elsewhere would provide the Intermodal Freight Transport Committee with a good start towards incorporating critical and cross-cutting issues into such a document.

## **Justification for Retaining the Committee**

Many of the points made in the committee's strategic plan (see Appendix 1) are directly responsive to the issue of retaining the committee. In the committee's assessment of its strengths, weaknesses, opportunities, and strengths, the following strengths suggest a committee that is active and engaged in TRB activities:

- Strong annual meeting attendance,
- Excellent participation in the annual meeting paper review process,
- Well attended annual meeting sessions,
- Successful committee co-sponsoring of annual meeting sessions,
- Good communications tools (e.g., web site),
- Extensive collective industry knowledge,
- Coordinated and documented strategic planning activity,
- Written guidelines for committee membership,
- Energetic and dedicated "core" membership,
- Strong leadership, educated about TRB,
- List of research problem statements,
- Research working paper with intermodal freight and general freight research ideas, and
- Committed and helpful "friends."

Retaining the committee would enable its members to continue building on its strengths while recognizing opportunities and addressing and adjusting to weaknesses and threats, also identified in the committee's strategic plan. Eliminating the committee would eliminate a voice that focuses solely on intermodal freight transportation issues.

## **Committee Scope**

The present committee scope is as follows:

*The scope of this committee includes all aspects of research pertaining to intermodal freight transport. Attention will be given initially to rail-water, rail-highway, highway-water, and highway-air modal combinations, but other combinations may be considered later. As used here, intermodal freight transport includes all shipments that employ more than one mode in a single through movement from origin to destination; local pick-up and delivery by truck for others not included. Consideration of rates, routes, services, transfer facilities, containers, and other items that impact the movement of freight in intermodal transport are included.*

The committee recommends that the scope be revised and updated as follows:

*The scope of the committee includes all aspects of research pertaining to intermodal freight transport. The emphasis is on rail-water, rail-highway, highway-water, and highway-air modal combinations, but other combinations are considered when appropriate. For purposes of the committee, intermodal freight transport includes all shipments that employ more than one mode in a single through movement from origin to destination. Research ideas and topics focus on a wide variety of critical and cross-cutting issues that impact the movement of freight in intermodal transport, including capacity, congestion, connections, containers, funding, information systems, infrastructure, planning, rates, routes, safety, security, services, and transfer facilities.*

## **Committee Organization**

As shown in its strategic plan, the Intermodal Freight Transport committee is organized as follows: chair, vice chair, and secretary, along with coordinators for four activity areas: meetings, research, communications, and liaison. The committee believes this organizational structure is working reasonably well and does not recommend any changes at this time.

## **Committee Membership**

As of March 31, 2006, the Intermodal Freight Transport committee had 24 regular members, three international members, and two “under 30” members. Appendix 3 shows the distribution of committee membership geographically and by occupational groupings. The map shows that just under 50 percent of committee members are from the midwestern and western U.S., 38 percent are from the eastern and southern U.S., and 8 percent are from overseas. By occupation, 38 percent are consultants, 17 percent are from universities, and 14 percent are from metropolitan planning organizations. No other category accounts for more than seven percent of total membership.

Appendix 4 shows the diversity of committee ATO45 in comparison to other committees in the Freight Systems Group and TRB’s Technical Activities Division as of 2004-2005. The appendix shows that compared to other committees, the Intermodal Freight Transport Committee has a relatively greater percentage of international, women, and under 30 members; a relatively smaller percentage of emeritus and minority members; and a greater percentage of state DOT members than in the Freight Systems Group but a smaller percentage than in the Technical Activities Division.

Committee friends help committee members with a wide variety of committee and TRB activities, and are an important source of new members. Over the last six years, the number of committee friends has increased from 26 in 2000 to 80 in 2002, 126 in 2004, and 149 as of March 31, 2006.

The committee regularly updates its lists of committee members and friends, which can be reviewed at: <http://www.wilbursmith.com/at045/people.cfm>.

The next committee rotation is scheduled for April 2007.

## Committee Goals and Objectives for the Next Triennium

The Intermodal Freight Transport Committee's strategic plan will serve a major role in guiding the committee activities over the next triennium. The strategic plan includes six goals, a number of specific strategies for each goal, and an action agenda with action items for each of the four activity areas identified in the strategic plan. In general, the goals, strategies, and action agenda support a variety of initiatives that TRB, the Technical Activities Division, and the Freight Systems Group have established.

In response to TRB's increased emphasis on critical and cross-cutting issues, committee leadership intends to encourage committee members to pay special attention to the issues that relate to intermodal freight transport. For example, the *Critical Issues* report identifies freight capacity as a key issue; clearly this has relevance to Intermodal Freight Transport Committee members. Indeed, at the 2006 TRB annual meeting, committee members took a lead role in helping to develop the "Freight Day" sessions on Freight Systems Capacity Issues. Funding future capacity and identifying cost-effective types of capacity expansion are private and public sector issues that should be researched through a collaborative effort that the Intermodal Freight Transport Committee can and should support.

Another example is the cross-cutting issue of "getting rid of the seams" as identified in the Technical Activities Division Leadership Guide. Intermodal freight facilities and connections help integrate modes and institutions for a more seamless transportation system; the Intermodal Freight Transport Committee over the years has helped develop sessions and problem statements that address this cross-cutting issue. In the next triennium, committee leadership proposes to work with committee members and friends to develop research problem statements that include but are not limited to 1) defining and describing how to identify and categorize intermodal freight seams, 2) evaluating how to measure the impact of various types of seams on fluidity and thus system capacity, 3) evaluating and develop methods for quantifying environmental impacts and benefits of improved fluidity at the seams, and 4) identifying potential projects that could be candidates for public-private partnership development and implementation.

Other critical issues that the committee may consider over the next triennium include how to address emergencies that disrupt normal freight intermodal operations be they natural disasters, terrorist strikes, or the result of trying to put too much freight through the existing system. This could include an analysis of the need for redundant intermodal freight facilities and how might they be funded and managed.

Committee leadership will encourage committee members and friends to "champion" intermodal freight research by working more closely with the Federal Highway Administration and other federal transportation agencies, the American Association of State Highway and Transportation Officials, state Departments of Transportation, university transportation centers, the private sector, and other stakeholders to identify and fund research projects. This will require a commitment and focus by committee members to more fully engage in liaison activities with other TRB committees and stakeholders.

## **Planned Committee Activities**

As noted above, the committee intends to use its strategic plan as a guide for its activities over the next triennium. This will include maintaining, continuing, and enhancing activities described elsewhere in this report, as well as pursuing action agenda items not previously undertaken. In general, this means engaging in ongoing TRB, Technical Activities Division, and Freight System Group activities. The committee also will engage in various ad hoc activities upon request from TRB and its sub-units.

In April 2007, the committee will undergo its triennial membership rotation process. This will provide an excellent opportunity for re-visiting committee membership and identifying groups which are under-represented. Appendices 3 and 4 of this report suggest that the following groups are among those that are under-represented: private-sector shippers and carriers and minority groups. The committee will continue to review whether any candidates are available for emeritus membership, as well as whether seeking additional state DOT members may help with advancing research problem statements through the annual review and selection process for cooperative research programs.

Committee leadership will work to identify potential new members who can help meet the committee's goals and objectives, including helping to implement strategies and action items identified in the committee's strategic plan. The rotation process also will provide an opportunity to identify which existing members wish to remain on the committee and will work to help implement strategies and action items.

Committee leadership will work with existing and new committee members to identify issues of importance to the public and private sectors and to develop relevant and timely research problem statements that will lead to research projects that add value to intermodal freight transportation in particular and to economic well-being and livability in general. The results of such research will help address critical and cross-cutting issues and will be suitable topics for annual and summer meeting sessions, papers submitted to TRB and other organizations for publication, and conferences addressing intermodal freight or related topics.

## **Appendices**

Strategic Plan, Intermodal Freight Transport Committee, Transportation Research Board

Intermodal Freight Transport Committee Problem Statements

Members, Intermodal Freight Transport Committee, March 31, 2006

Membership by Selected Categories of Diversity, Intermodal Freight Transport Committee in Comparison to the Freight Systems Group and the Technical Activities Division, 2004-2005

## Appendix 1

### Strategic Plan

#### Intermodal Freight Transport Committee Transportation Research Board

This document presents the strategic plan of the Transportation Research Board's Intermodal Freight Transport Committee, sometimes referenced by its TRB alphanumeric code—ATO45. The plan was developed in 2003 by an ad hoc subcommittee of the full committee, and follows an earlier strategic planning concept developed in the year 2000. The plan was presented to the committee at its January 2004 meeting and was completed in February 2004. The initial plan was revised as part of the committee's Triennial Strategic Plan Evaluation process completed in March 2006.

The discussion below consists of the following:

- an overview of TRB and the Intermodal Freight Transport Committee,
- an itemization of the committee's Strengths, Weaknesses, Opportunities, and Threats, sometimes referenced as a "SWOT Analysis,"
- a discussion of a realigned committee structure, and
- the committee's mission, goals, strategies, and action agenda.

The committee's strategic plan is intended to be a "living document" that will be reviewed periodically and updated as needed. Comments about the strategic plan should be directed to the committee's chair or to any of the committee's other officers.

#### *Overview*

The Transportation Research Board (TRB) is one of six major divisions of the National Research Council, a private, nonprofit institution that provides services to the government, public, and scientific and engineering communities. Established in 1920, the TRB is supported by state transportation departments and federal agencies, including the U.S. Department of Transportation and its component administrations.

The TRB is organized into five major divisions, one of which is "Technical Activities" (Division A). The Technical Activities Division is further divided into 11 groups comprised of approximately 200 standing committees and task forces, representing 4,000 volunteer members. Four of the 11 groups include standing committees that focus wholly or partially on freight-related activities. One of these four groups--Freight Systems—is comprised of 10 standing committees and two task forces.

The Intermodal Freight Transport Committee is one of the 10 standing committees and two task forces in the TRB Freight Systems Group. The Intermodal Freight Transport Committee was established in 1984, a few years before passage of the federal Intermodal Surface Transportation Efficiency Act. In its 20 plus years of existence, the committee has focused on a wide variety of intermodal matters reflecting the increased visibility and importance of intermodal in general and freight in particular.

The scope of the committee includes all aspects of research pertaining to intermodal freight transport. The emphasis is on rail-water, rail-highway, highway-water, and highway-air modal combinations, but other combinations are considered when appropriate. For purposes of the committee, intermodal freight transport includes all shipments that employ more than one mode in a single through movement from origin to destination. Research ideas and topics focus on a wide variety of critical and cross-cutting issues that impact the movement of freight in intermodal transport, including capacity, congestion, connections, containers, funding, information systems, infrastructure, planning, rates, routes, safety, security, services, and transfer facilities.

### **Strengths, Weaknesses, Opportunities, and Threats**

Many strategic planning efforts include an assessment of strengths, weaknesses, opportunities, and threats, sometimes referenced as a SWOT analysis. The purpose of such an analysis is to identify a wide variety of factors and forces affecting the ability of an organizational entity to meet its goals and accomplish its objectives. Figure 1 provides a summary of the components of a SWOT analysis for the Intermodal Freight Transport Committee.

**Figure 1**  
Intermodal Freight Transport Committee  
SWOT Analysis Overview

<p><i>Strengths</i></p> <ul style="list-style-type: none"> <li>• Things the committee does well</li> <li>• Positive committee characteristics</li> </ul>	<p><i>Weaknesses</i></p> <ul style="list-style-type: none"> <li>• Things the committee does not do well</li> <li>• Negative committee characteristics</li> </ul>
<p><i>Opportunities</i></p> <ul style="list-style-type: none"> <li>• Areas where the committee can add value</li> <li>• Potential for enhancing effectiveness</li> </ul>	<p><i>Threats</i></p> <ul style="list-style-type: none"> <li>• Issues that threaten committee effectiveness</li> </ul>

Figure 2 provides a more detailed profile of the committee’s strengths, weaknesses, opportunities, and threats. These should be viewed as a “snapshot in time” and will change with changes in internal and external factors affecting the committee.

**Figure 2**  
**Intermodal Freight Transport Committee**  
**SWOT Analysis Details**

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Strong annual meeting attendance</li> <li>• Excellent participation in the annual meeting paper review process</li> <li>• Well attended annual meeting sessions</li> <li>• Successful committee co-sponsoring of annual meeting sessions</li> <li>• Good communications tools (e.g., Web site)</li> <li>• Extensive collective industry knowledge</li> <li>• Coordinated and documented strategic planning activity</li> <li>• Written guidelines for committee membership</li> <li>• Energetic and dedicated “core” membership</li> <li>• Strong leadership, educated about TRB</li> <li>• List of research problem statements</li> <li>• Research working paper with intermodal freight and general freight research ideas</li> <li>• Committed and helpful “friends”</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• Limited member time and energy</li> <li>• No ready-made path to practical application of good ideas and best practices</li> <li>• Short and sometimes unpredictable timelines</li> <li>• Insufficient annual meeting time</li> <li>• Minimal participation by some committee members</li> <li>• Insufficient coordination with other committees</li> <li>• Minimal participation in research activities</li> <li>• Infrequent meetings</li> <li>• Limited carrier and shipper participation as committee members or “friends”</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Broad array of valid freight research needs</li> <li>• Increasing TRB awareness of intermodal freight needs</li> <li>• Inclusion of funding for a freight cooperative research program in SAFETEA-LU</li> <li>• Inclusion of new committee talent through periodic member rotation</li> <li>• Wider communication among stakeholders</li> <li>• Creation of an integrated freight research “agenda” supported by all committees</li> <li>• Updating of existing list of problem statements and developing new statements</li> <li>• Increasing number of state and metropolitan freight advisory councils/committees</li> <li>• FHWA, AASHTO, and National Freight Stakeholders Coalition support for freight policy, planning, programming, and research</li> <li>• Potential co-sponsorship of a national freight conference</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Lagging economy, scant budgets</li> <li>• Insufficient member time and energy to accomplish committee and TRB objectives</li> <li>• Overlap between TRB freight-related committees</li> <li>• Different perspectives on the meaning and scope of major intermodal freight issues</li> </ul>

Through the active involvement of a number of its members, the committee is characterized by an extensive set of strengths. These strengths, along with factors internal and external to TRB, enable the identification of a variety of potential opportunities, some of which are shown in Figure 2. Constraining the realization of the committee's work are a number of weaknesses and threats which should be realistically considered in identifying the substance and timing of what the committee can accomplish.

This strategic planning effort seeks to balance an understanding of the committee's strengths, weaknesses, and threats in assessing future opportunities. As noted above, the strategic plan is a living document that should be considered as a snapshot in time affected by numerous internal and external factors. As internal and external factors change, so too will the committee's understanding of what it can realistically seek to achieve.

### ***Committee Structure***

The committee's 2000 strategic planning concept identified five subcommittees within which to focus much of the committee's work. These were: Internal TRB Liaison, External Liaison, Communications, Research, and Membership. Experience in working with this structure suggested retaining the main components but organizing them differently based on a more informed understanding of what will work and what is needed. The current committee structure, shown in Figure 3, includes the positions of committee chair, vice chair, and secretary, and modifies the subcommittees to "activity areas," each with one or more coordinators to shape and guide liaison, communications, meetings, and research activities.

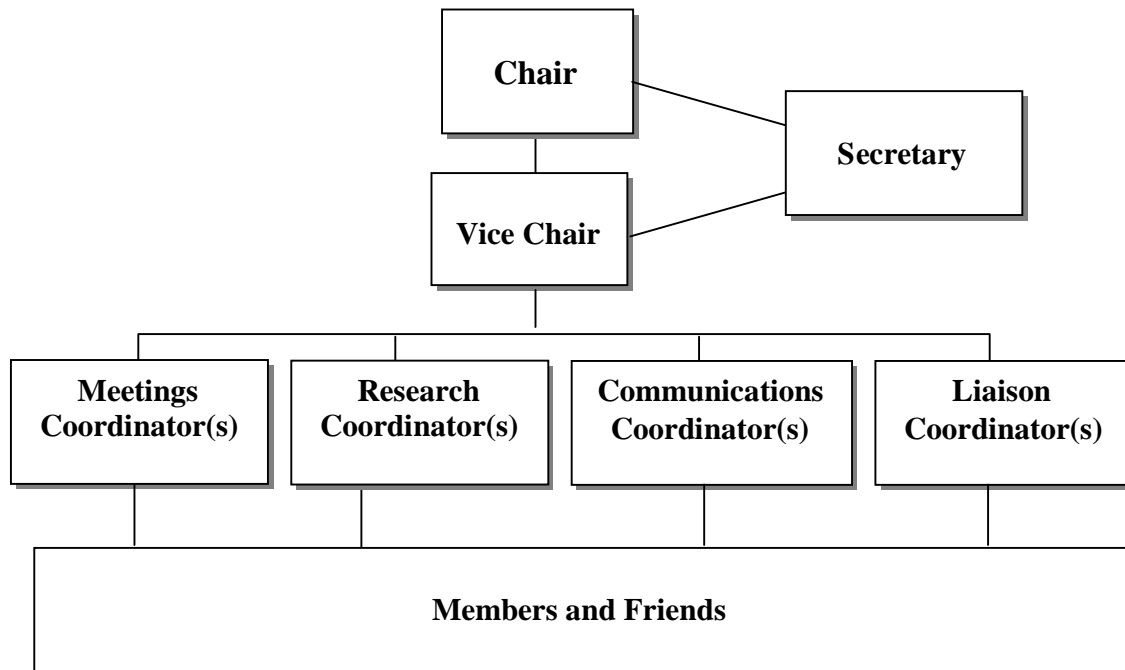
The Meetings activity area consists of seeing to the tasks associated with sponsoring and organizing sessions for annual and summer meetings. The subtasks include, but are not necessarily limited to, the following:

- identifying people to organize ATO45 sponsored or co-sponsored sessions for the annual meeting, and working with session organizers to identify speakers and perform other work as needed,
- assisting as needed with the process for reviewing papers submitted for the annual meeting,
- working with TRB staff and other committees to organize sessions and other activities for the summer meeting, and
- identifying opportunities to sponsor, co-sponsor, or otherwise participate in workshops, conferences, or meetings focusing on intermodal freight transport themes or topics.

The Research activity area represents the heart of the committee. The subtasks include, but are not necessarily limited to, the following:

- Working with TRB staff and others to identify opportunities to update existing intermodal freight research problem statements, develop new problem statements for TRB or other organizations, and serve on NCHRP or other research advisory panels,

**Figure 3**  
**Committee Structure**



- Encouraging ATO45 members and friends to prepare and submit papers to be considered for presentation at the annual meeting and publication in the *Transportation Research Record*, and to prepare papers for other TRB publications (e.g., *TR News*) as well as publications of other organizations, Providing input on intermodal freight transportation research ideas and needs to TRB management and staff, other TRB committees, and groups and organizations outside TRB, and
- Working with AASHTO committees, State & Federal DOT's and other parties who through their support for specific research projects can insure the proposed research receives funding and is completed.

The Communications activity area consists of maintaining and updating the committee Web page. Other tasks would be undertaken as needed.

The Liaison activity area combines internal and external liaison activities. This work consists of strengthening ATO45 ties to other TRB freight committees, selected other TRB committees, and other organizations outside TRB.

## **Committee Mission, Goals, Strategies and Action Agenda**

The following discussion provides specifics on the committee's overall mission, goals, strategies, and activities. The mission and goals are broad statements of what the committee seeks to accomplish. Strategies and activities are more specific and also more subject to change as internal and external considerations change. The strategies and activities presented herein will be supplemented with more specific work tasks that arise from time to time and are not specifically identified in this strategic planning document.

### *I. Mission*

Promote innovation and progress in research on intermodal freight transportation.

### *II. Goals*

1. Maintain and enhance TRB's role in fostering and contributing to the research, development and implementation of new technologies and innovative practices in the field of intermodal freight transport
2. Promote a research agenda that provides value to and encourages the participation and support of both the private and public sectors in research on intermodal freight transport
3. Contribute to TRB's goal of increasing its contributions to decision-making in national transportation policy issues related to intermodal freight transport
4. Contribute to improved communication and public awareness of critical and cross-cutting issues in intermodal freight transport and more extensive dissemination of research findings
5. Engage practitioners, academics, students, and others in identifying intermodal freight research needs and conducting research to address the needs
6. Identify potential support for specific intermodal freight research projects and encourage funding of projects by those who have access to funds

### *III. Strategies to Support Goals*

*Goal 1: Maintain and enhance TRB's role in fostering and contributing to the research, development and implementation of new technologies and innovative practices in the field of intermodal freight transport*

#### *Strategies:*

- Provide a forum for the advancement and communication of research on emerging intermodal freight transport critical and cross cutting issues and ideas
- Strengthen the committee's role as a catalyst for identifying and promoting the contribution of research on intermodal freight transport to overall transportation research and policy formulation

- Maintain strong ties and regular communication with TRB staff and officers to ensure that committee activities contribute to TRB priorities and activities
- Increase inter-group liaison between committee members and other TRB committees to ensure that research needs are being adequately addressed, and to leverage the participation of committee members into multiple activities
- Monitor the committee's progress through a set of performance measures
- Prepare a committee strategic plan review every three years

*Goal 2: Promote a research agenda that provides value to and encourages the participation and support of both the private and public sectors in research on intermodal freight transport*

*Strategies:*

- Prepare an annual set of intermodal freight research ideas that reflect current and future business, policy, and technical needs
- Develop NCHRP problem statements each year for submittal to TRB
- Contribute to TRB efforts to identify a consolidated freight research agenda
- Develop problem statements for research ideas that can be supported by outside organizations (AASHTO, USDOT, IANA, etc.)
- Encourage committee members to become actively engaged in efforts to promote opportunities to secure financial and organizational support for intermodal freight research

*Goal 3: Contribute to TRB's goal of increasing its contributions to decision-making in national transportation policy issues related to intermodal freight transport*

*Strategies:*

- Identify critical and cross-cutting issues related to current and upcoming policy debates that require further research
- Encourage the submission of relevant and quality papers for the TRB annual meeting
- Promote committee member involvement in policy-related activities related to committee interests (legislative conferences, hearings, DOT outreach activities and listening sessions, etc.)
- Look for opportunities for committee members to provide input into federal, state and local decision-making based on their "real-world" experience
- Work with intermodal stakeholders testing trials of key ideas and best practices coming from research

*Goal 4: Contribute to improved communication and public awareness of issues in intermodal freight transport and more extensive dissemination of research findings*

*Strategies:*

- Create opportunities to incorporate the findings of TRB research projects into annual and summer meeting sessions

- Continue to organize significant policy or research sessions for TRB annual meetings
- Develop potential topics and sessions for specialty conferences
- Create opportunities to disseminate the results of intermodal freight transport research through other organizations or publications
- Develop an outreach and communication program that encourages awareness of and participation in committee activities by the broader transportation community, both nationally and internationally

*Goal 5: Actively engage practitioners, academics, students, and others in identifying intermodal freight research needs and conducting research to address the needs*

*Strategies:*

- Encourage and expand opportunities for participation and interaction by the committee's members, friends, and other interests in identifying research needs
- Maintain the diversity of the committee's membership to include members of public sector agencies (federal, state, regional, local), private-sector groups, academic and research interests, and members from different geographic areas
- Provide a forum to publicize opportunities for academics, students, research institutes, or consultants to conduct intermodal freight research
- Reach out to the commercial freight industry and develop a conduit for collaboration on pressing business research needs regarding intermodal freight transport

*Goal 6: Identify potential support for specific intermodal freight research projects and encourage funding of projects by those who have access to funds*

*Strategies:*

- Identify stakeholders that would benefit from a proposed research project and solicit their support for the research
- Identify potential sources of funds for the proposed project and work both directly and indirectly to obtain the commitment of funds

#### IV. Action Agenda

*Research*

- Develop an annual research agenda for discussion and adoption during the annual meeting
- Explore opportunities to polish and refine a committee-generated working paper on freight research activities
- Periodically update and refine existing AT045 problem statements
- Develop at least 3 problem statements each year, including at least one research problem statement for an NCHRP synthesis project
- Revise and update the committee's millennium paper
- Develop at least one call for papers each year

- Work with TRB staff to appoint committee members to NCHRP research panels where appropriate
- Actively solicit input from committee members, friends and other transportation professionals on the committee research agenda
- Work with other committees of the TRB Freight Systems Group and modal groups on joint research initiatives
- Appoint “task forces” of committee members, friends, or members of other committees to address specific topics that require more detailed exploration for identification of specific research needs, on an as needed basis
- Monitor the development of the National Cooperative Freight Transportation Research Program and look for opportunities to contribute to intermodal freight transport research through this program

### *Meetings*

- Develop at least two annual meeting sessions on topics identified on the committee’s research agenda, working in partnership with other TRB committees or related organizations where possible
- Look for opportunities to sponsor or co-sponsor sessions on intermodal freight transport at TRB summer meeting sessions
- Develop at least one paper or poster session for the TRB annual meeting based on research conducted for TRB programs and/or papers submitted for review
- Organize at least one presentation on a research topic identified on the committee’s research agenda for presentation at the committee’s annual business meeting
- Review and comment on intermodal freight transport papers that TRB staff assigns to the committee
- Develop potential topics and panel sessions for specialty conferences where appropriate
- Identify opportunities to sponsor, co-sponsor, or otherwise participate in workshops, conferences, or meetings focusing on intermodal freight transport themes or topics

### *Communications*

- Maintain a committee Web site as a forum for exchanging information on research needs, current research findings, policy issues and member news, primarily oriented to committee members and friends but also to other transportation professionals engaged in intermodal freight transport
- Identify opportunities to disseminate information with links to the committee Web site from other relevant Web sites
- Identify opportunities inside and outside TRB to publish information on research results, calls for papers, or topics of interest to the committee
- Establish and maintain a communications channel with the intermodal freight transport business community through which research needs and results can be effectively communicated

### *Liaison*

- Develop a list of TRB committees and other organizations with which the committee desires to maintain regular contact
- Identify members to perform liaison with those groups for the purposes of identifying common interests and reporting that information to ATO45 members
- Participate in meetings of other TRB committees, the TRB Freight Systems Group, and other committees and organizations where appropriate
- Monitor Web sites and/or newsletters of other relevant committees and disseminate information of interest to ATO45 members

## Appendix 2

### Intermodal Freight Transport Committee Problem Statements

#### Problem Statement Number 1

##### *Title*

Consolidating Freight Movement Origins and Destinations at Inland Distribution Centers

##### *Problem*

The Federal Highway Administration's (FHWA) Freight Analysis Framework forecasts that U.S. domestic freight volumes and international freight volumes will increase by 67 percent and 85 percent, respectively, between 1998 and 2020. The FHWA suggests that this growth, especially in international trade, is likely to present challenges to U.S. ports and border gateways. These challenges could be substantial for intermodal facilities where freight is exchanged between modes, for example, at marine facilities in the nation's leading ports.

The increasing importance of intermodalism was recognized in the federal Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, the Transportation Equity Act for the 21<sup>st</sup> Century (TEA 21), passed in 1998, and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA LU), passed in 2005. All three bills included provisions addressing the need for states and metropolitan areas to develop transportation plans and programs that incorporate the importance of intermodal facilities. SAFETEA LU provided additional encouragement for intermodal freight transport, including the establishment and funding of a Freight Intermodal Distribution Pilot Grant Program. This program provides grants to 1) facilitate and support intermodal freight transport initiatives at the state and local levels to relieve congestion and improve safety, and 2) provide capital funding to address infrastructure and freight distribution needs at inland ports and intermodal freight facilities.

The proposed research is needed to help better understand the contribution of inland intermodal freight transport facilities to the nation's goods movement challenges. Findings from this research would support and complement various intermodal freight provisions and initiatives in ISTEA, TEA 21, and SAFETEA LU, and would help inform policy makers developing transportation funding legislation.

##### *Objective*

The primary objective of the proposed research would be to investigate the feasibility and benefits of consolidating intermodal freight movement origins and destinations at inland distribution centers. More specifically, this research would:

- Develop a commonly accepted definition of inland distribution centers and their role in consolidating intermodal freight movement origins and destinations,
- Review research on inland distribution centers since passage of the Intermodal Surface Transportation Efficiency Act of 1991,
- Prepare an inventory of inland distribution centers established during the last 15-20 years,
- Summarize the advantages and disadvantages of inland distribution centers,
- Identify successful inland distribution centers and factors contributing to success,

- Identify failed inland distribution centers and factors contributing to failure, and
- Prepare a guidebook of best practices to successfully consolidate intermodal freight movement origins and destinations at inland distribution centers.

### **Key Words**

Best practice, destination, distribution center, freight, guidebook, inland, intermodal, origin

### **Related Work**

1. Federal Highway Administration, *Review of Environmental Factors Affecting Intermodal Freight Transportation Facility Development and Expansion*, Washington, D.C., 2001 ([http://ops.fhwa.dot.gov/freight/documents/final\\_report\\_01\\_01.doc](http://ops.fhwa.dot.gov/freight/documents/final_report_01_01.doc)).
2. DMJM Harris, *Port Inland Distribution Network (PIDN), South Jersey Site Evaluation and Feasibility Development Study*, prepared for the New Jersey Department of Transportation and Delaware Valley Regional Planning Commission, July 2003 (<http://www.state.nj.us/transportation/works/freight/pdf/sjpidnfr.pdf>).
3. Mottley, Robert, "New York-New Jersey's Inland Alternative," *American Shipper*, vol. 43, no. 6, 2001 ([http://www.americanshipper.com/paid/JUN01/newyork\\_newjersey.asp#aaa](http://www.americanshipper.com/paid/JUN01/newyork_newjersey.asp#aaa)).
4. Strom, Shelly, "Northwest Container Looks Outside the Hubs," *Business Journal of Portland*, November 12, 2004 ([www.bizjournals.com/portland/stories/2004/11/15/story5.html?t=printable](http://www.bizjournals.com/portland/stories/2004/11/15/story5.html?t=printable)).
5. Transportation Research Board, *Financing and Improving Land Access to U.S. Intermodal Cargo Hubs*, NCHRP Report 497, Washington, D.C., 2003 ([http://trb.org/publications/nchrp/nchrp\\_rpt\\_497.pdf](http://trb.org/publications/nchrp/nchrp_rpt_497.pdf)).

### **Urgency/Priority**

The proposed research is needed to help identify benefits and the economic, operational, and technical feasibility of establishing inland intermodal distribution centers for multimodal goods movement. The research is consistent with one of the nine priorities for research under the National Cooperative Freight Transportation Research Program, Section 5209 of SAFETEA LU; i.e., the feasibility of consolidating origins and destinations for freight movements.

### **Cost**

\$250,000-\$300,000

### **User Community**

American Association of State Highway and Transportation Officials, FHWA, metropolitan planning organizations, the private sector, state departments of transportation, U.S. Department of Transportation Research and Innovative Technologies Administration

### **Implementation**

The proposed research might be implemented through state transportation agencies, metropolitan planning organizations, port authorities, and other entities working with the private sector and federal agencies to establish inland distribution centers that would consolidate freight movement origins and destinations at discrete intermodal nodes in the multimodal transportation network.

### ***Effectiveness***

The effectiveness of the proposed research would be evaluated by whether or not it is used by public and private sector entities potentially involved with planning for and establishing inland intermodal distribution centers. For inland distribution centers that are established, measures of effectiveness could include volume of freight moved through the center, cost savings to shippers using the inland center, number of trucks that move in uncongested or less congested traffic conditions with the inland center than without the center, adverse environmental impacts reduced or avoided in congested locations, and number of jobs created at the inland center.

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## **Problem Statement Number 2**

### ***Title***

Intermodal Connections for the Transportation of Containers by Pneumatic Capsule Pipelines

### ***Problem***

Many major seaports in the nation are over-crowded with containers. This contributes to congestion on roadways and air pollution in densely populated areas adjacent to port facilities. Along with concerns about congestion and pollution are concerns about safety and security at port facilities, especially as related to possible terrorist usage of containers to carry materials that if deployed could cause considerable damage and loss of life in nearby densely populated areas. Pneumatic capsule pipelines (PCPs) represent an alternative that could help address concerns about congestion, pollution, safety, and security. Such pipelines could be used to carry containers from port facilities to less populated inland locations where the containers could be stored, inspected, and distributed by truck or rail to intermediate and final destinations, thereby helping to address congestion and pollution concerns as well as potentially reducing the likelihood of damaging impacts from terrorists' activities in densely populated areas near ports.

Moving materials by pneumatic capsule pipeline is a relatively new technology which currently is being used in several locations. For example, PCPs are being used in Japan to transport minerals, construction materials, and solid wastes over short distances in circular pipes one meter in diameter or in one meter square rectangular conduits. To date, no system has been built to move containers by pipeline, but such a system was studied in 2003 in a project sponsored by the New York State Energy Research and Development Authority (see Related Work below). More detailed design and analysis are needed before such a system can be made operational. Other future research needs would include the investigation of design, financial, and other issues associated with intermodal connections at the two ends of the PCP conduit; i.e., the marine terminal on one end and a truck and/or train terminal on the other end.

### ***Objective***

The objective of this research is to investigate the planning and design of the intermodal terminals at the two ends of the PCP conduit: a marine terminal on one end for loading containers to and from ships, and an inland inspection/intermodal-transfer terminal or station for connection to trucks and/or railroads. The research would include investigating a terminal

design that would accommodate two-way movement of containers between marine and inland terminals.

### ***Key Words***

Capsule, congestion, container, intermodal, pipeline, pneumatic, pollution, safety, security

### ***Related Work***

Research on moving freight by pneumatic capsule pipeline has been undertaken for at least 30 years. For example, in 1976 the U.S. Department of Transportation sponsored a comprehensive research project which addressed the history, technology development, economics, environment, and social impacts of freight pipelines. The study also planned and analyzed a 6-ft diameter PCP from Philadelphia to Chicago for transportation of general freight.

Fifteen years later, the Intermodal Surface Transportation Efficiency Act (ISTEA) included a provision requiring the US Department of Transportation to “conduct a study to evaluate the feasibility, costs, and benefits of constructing and operating pneumatic capsule pipelines for underground movement of commodities other than hazardous liquids and gas.” In response to this requirement, the Volpe National Transportation System Center conducted a study and issued a 1994 report entitled “Tube Transportation,” which investigated the technical and economic feasibility and environmental and safety benefits of PCPs. In 1996, the American Society of Civil Engineers (ASCE) held a national workshop on pipeline research needs, which was followed by publication of a workshop report that identified freight pipeline as a needed key research area. In 1998, the ASCE Task Committee on Freight Pipelines prepared a state-of-the-art assessment report published in the *Journal of Transportation Engineering*, Vol. 124, No. 4.

From 1991 through 2000, the National Science Foundation supported the Capsule Pipeline Research Center, University of Missouri- Columbia, to conduct research and development on various types of capsule pipelines, including PCPs. Among the results of this research was the development of an electromagnetic capsule pump that would greatly enhance the capability of PCP for long-distance transport of containers.

In 2003, the Freight Pipeline Company completed “Feasibility of Underground Pneumatic Freight Transport in New York City” under the sponsorship of the New York State Energy Research and Development Authority. The study concluded that five potential PCP applications, including one for transporting containers in large underground conduits, were cost-effective and had environmental and safety benefits resulting from the reduced usage of trucks.

### ***Urgency/Priority***

The proposed research would contribute to a better understanding of the technical and financial issues associated with intermodal connections at the ends of PCPs. A better understanding of these issues would contribute to future research on how PCPs can help address congestion, pollution, safety, and security issues in the vicinity of the nation’s seaports. These are especially urgent issues to address given concerns about possible terrorist activity at the nation’s seaports.

**Cost**

\$250,000

**User Community**

U. S. Department of Transportation, Department of Homeland Security, and the port authorities of various large container ports.

**Implementation**

Port authorities, private sector businesses, and federal, state, regional, and local governments would implement PCP technologies that are found to be technologically and financially feasible and which would contribute to public policy goals and objectives associated with reducing congestion and pollution while enhancing the safety and security of businesses and residences in densely populated areas.

**Effectiveness**

The research could be considered effective if governmental and port authorities use its results in assessing transportation alternatives for addressing concerns about congestion, pollution, safety, and security in and near major seaports in densely populated regions of the United States.

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**Problem Statement Number 3****Title**

Land Use, Transportation, and other Issues Associated with Major Intermodal Cargo Hubs in Metropolitan Areas

**Problem**

Major intermodal cargo hubs often are located in or near the historic core of older metropolitan areas. Many cargo hubs were built before the widespread usage of motor vehicles. Cargo hubs, residences, and commercial areas tended to locate relatively near one another in part because transportation choices were limited, slow-moving, and expensive. Numerous business and residences moved away from the cargo hub as technology improved, core land values increased, and transportation options became cheaper. On the other hand, many businesses remained in or near the cargo hub due to advantages associated with clustering, the need to be near specialized transportation facilities such as waterways, and other reasons that varied among businesses.

As cargo hubs grew, their demand for space increased while the availability of appropriately zoned land diminished. In some cases, nearby land could be rezoned to industrial, or existing cargo hub property could be re-developed to accommodate growth. In other areas, options were limited for rezoning or redevelopment, forcing green field development of manufacturing and distribution facilities that continued to serve and rely on the cargo hubs in the urban core. In some areas, neighboring owners of non-industrial property objected to expansion of the cargo hub. And in yet other areas, owners of non-industrial property sought to force cargo hub uses away from their traditional core, or to re-zone vacant or abandoned property in the cargo hub to non-industrial uses.

These trends continue today. In many parts of the United States, lower costs of land and greater availability of developable land at the urban edge or elsewhere in the metropolitan area puts pressure on the transport system to off-set travel time and distance between these areas and cargo hubs. In some locations the demand for vacant or underused land contributes to pressures to rezone cargo hub properties from industrial to residential, commercial, and other uses. Further research is needed to address how to structure the transportation system to provide effective links between international and domestic cargo hubs, distribution centers, and manufacturing plants as congestion grows across the nation's metropolitan areas.

### ***Objectives***

1. Review the academic and non-academic literature on transportation, land use, zoning, economic, and environmental issues associated with major cargo hubs.
2. Summarize zoning, political, and other conflicts associated with land uses in and near major cargo hubs.
3. Develop case examples illustrating the zoning, political, and other conflicts associated with land uses in and near major cargo hubs.
4. Review site selection criteria and decisions of recently developed (e.g., last 8 years) manufacturing and distribution industries.
5. Identify best practices, strategies, or guidelines that have been or could be used to
  - reduce, avoid, and/or resolve zoning, political, and other conflicts associated with land uses in and near major cargo hubs, and
  - ensure efficient freight movement to and among manufacturing, distribution facilities, and cargo hubs.
6. Make research and other recommendations to address ongoing and future issues associated with land use, zoning, transportation, economic, and environmental issues associated with major cargo hubs in metropolitan areas.

### ***Key Words***

Cargo, hubs, intermodal, land use, transportation, zoning

### ***Related Work***

1. NCHRP Report 497, *Financing and Improving Land Access to U.S. Intermodal Cargo Hubs*, 2003
2. NCHRP Synthesis Report 320, *Integrating Freight Facilities and Operations with Community Goals*, 2003
3. NCHRP 8-36, Task 30, *Intermodal Freight Connectors: Strategies for Improvement*, August 2003
4. NCHRP 8-36, Task 33, *Best Practices in Statewide Freight Planning*, October 2003
5. NCHRP Project 8-47, *Guidebook for Freight Policy, Planning, and Programming in Small and Mid-Sized Metropolitan Areas*, in progress
6. NCHRP Project 8-53, FY 2005, *Integrating Freight into Transportation Planning and Project-Selection Processes*, in progress

***Urgency/Priority***

Commodity flow forecasts indicate that freight volumes and the demand for transportation services will continue to increase in areas with major intermodal cargo hubs. Meeting increasing demands will require a variety of measures to address the need for freight transportation facilities. Land use decisions can facilitate or worsen local, regional, and state governments' ability to address freight transportation needs, including those for major cargo facilities.

***Cost***

\$250,000-\$300,000

***User Community***

American Association of State Highway and Transportation Officials, Federal Highway Administration, Transportation Research Board, American Planning Association, American Institute of Certified Planners, Association of Metropolitan Planning Organizations

***Implementation***

Results of this research would help planners, economic development personnel, elected officials, and the general public better understand land use issues associated with major cargo hubs as well as transportation concerns associated with goods movement between cargo hubs, manufacturing companies, and distribution centers in the urban core, the urban periphery, and other locations in metropolitan areas. Implementation would occur in part through local land use and transportation decisions that were "cargo hub friendly."

***Effectiveness***

This research will be effective if state and local officials, land use planners, transportation specialists, economic developers, shippers, carriers, and other groups take into consideration the study's findings when making transportation and freight-related land use decisions affecting cargo hub locations in metropolitan areas.

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**Problem Statement Number 4**

***Title***

Public-Private Partnerships for Increasing Capacity in Rail Corridors

***Problem***

Rail capacity in many parts of the U.S. is stretched to its limits. At the same time, the freight railroad industry is entering an era of new constraints on its financial performance. Intermodal traffic is the fastest growing component of rail freight traffic and has put considerable strain on the capacity of the existing infrastructure. Further projected growth in freight overall and intermodal in particular will cause more capacity constraints and issues.

Public agencies face a similar situation: highways are over capacity, freight traffic is exploding, and the financial resources to accommodate growth are limited. Adding rail

capacity provides significant relief in the intermodal supply chain while relieving the need for enormous costs in highway construction and maintenance. The *Freight Rail Bottom Line Report* issued by the American Association of State Highway and Transportation Officials (AASHTO) indicates that at the current investment level, the freight rail system could carry the same volume of freight in 2020 that it does today, but little more. With more freight added to the highway system, AASHTO estimates that over a 20-year window, costs to shippers would equal \$326 billion, costs to highway users would equal \$492 billion, and additional highway costs would equal \$21 billion (not counting additional maintenance and bridge costs).

As the demand for both freight and passenger transportation grows and the available land and funding resources dwindle, there is a need to maximize the use of all existing transportation facilities, including those privately owned. Today there are a few good examples of public-private partnerships (such as CSX in Virginia and the District of Columbia), but there is a need for more. The U.S. needs to analyze the benefits of public investment in rail infrastructure to benefit intermodal transportation commodity flow, including at major terminals, without diminishing private corporate activity and investments of the owning railroads.

### ***Objective***

The primary objective of this project is to identify the benefits of public investment in rail infrastructure to enhance capacity and efficient flow of freight. Specific objectives are to:

- Identify locations where rail capacity constraints exist,
- Identify where public investment in passenger rail infrastructure is anticipated,
- Quantify the cost of adding rail capacity,
- Identify a mechanism for the development of public/private partnerships for planning and implementation of such capacity improvements, and
- Quantify benefits to the U.S. economy at large from the implementation of rail capacity improvements, including highway cost savings and productivity gains.

### ***Key Words***

Benefits, capacity, congestion, corridor, freight, infrastructure, investment, partnership, private, public, rail

### ***Related Work***

1. I-95 corridor between New York and the Carolinas involving CSX, Norfolk Southern, Amtrak, and the states of Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Virginia, and North Carolina ([http://www.i95coalition.org/PDF/One%20paggers/One%20Pager\\_Rail.pdf](http://www.i95coalition.org/PDF/One%20paggers/One%20Pager_Rail.pdf))
2. American Association of State Highway and Transportation Officials (AASHTO), *Freight-Rail Bottom Line Report*, January 2003 (<http://freight.transportation.org/doc/FreightRailReport.pdf>)
3. Transportation Research Board, "Rail-Freight Solutions to Roadway Congestion," NCHRP Project 8-42 (<http://www4.trb.org/trb/crp.nsf/All+Projects/NCHRP+8-42>)

***Urgency/Priority***

Public investment in rail freight projects has been rare. Yet, highway congestion is mounting and maintaining and expanding the infrastructure is becoming more difficult. As the global economy grows and intermodal traffic increases, the demand to move both people and freight is surpassing the available infrastructure capacity. Improved capacity of our rail corridors can provide critical relief, both physical and financial, for the nation's highway corridors.

***Cost***

\$200,000

***User Community***

American Association of Railroads, AASHTO, American Public Transit Association, Federal Highway Administration, National Highway Traffic Safety Administration, I-95 and other corridor coalitions, metropolitan planning organizations, state departments of transportation, U.S. Department of Transportation, and individual railroad companies

***Implementation***

The results of this study would help freight planners, commuter rail planners, high-speed rail authorities, and railroad freight carriers define key elements for structuring public- private partnerships. Cost sharing strategies would be developed to illustrate examples of how both freight and passenger transportation would benefit from new capacity. The *Freight-Rail Bottom Line Report* identified consequences of not addressing the challenges of freight capacity. The implementation of this effort would expand further some of the remedies required, and define more specifically a process to achieve them.

***Effectiveness***

Societal impacts would include reduced highway congestion, improved air quality and energy efficiency, reduced stress and maintenance costs on the highway network, improved freight systems, more competitive rail freight service, and increased passenger movement by rail.

**Appendix 3**  
**Members, Intermodal Freight Transport Committee, March 31, 2006**



<u>FHWA</u>	<u>FTA</u>	<u>FRA</u>	<u>FAA</u>	<u>MARAD</u>	<u>NHTSA</u>	<u>Other Federal</u>	<u>State</u>	<u>MPO</u>	<u>City</u>
2						1	2	4	
<u>County</u>	<u>University</u>	<u>Research Institute</u>	<u>Industry</u>	<u>Consultant</u>	<u>Association</u>	<u>Other</u>			
	1 3 (IM) 1(YM)	2	1	10 1 (YM)		1			

Appendix 4

**Membership by Selected Categories of Diversity,  
Intermodal Freight Transport Committee in Comparison to the  
Freight Systems Group and the Technical Activities Division, 2004-2005**

Code	Title	Number of Members	Percent of Total Number of Members					
			Emeritus	International	Young	Female	Minority	State DOT
ATO45	Intermodal Freight Transport	29	0	10.34	6.9	20.69	3.45	13.79
AT000	Freight Systems Group	287	1.39	8.71	3.14	16.72	9.76	5.23
A0000	Technical Activities Division	5,258	3.94	7.09	2.72	19	12.69	14.30

Source: TRB, Committee Member Stats 2004-5, Excel Spreadsheet, July 7, 2005