This PDF document was made available from www.rand.org as a public service of the RAND Corporation.

Jump down to document ▼

The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world.

Support RAND
- Purchase this document
- Browse Books & Publications
- Make a charitable contribution

For More Information
- Visit RAND at www.rand.org
- Explore RAND Infrastructure, Safety, and Environment
- View document details

Limited Electronic Distribution Rights
This document and trademark(s) contained herein are protected by law as indicated in a notice appearing later in this work. This electronic representation of RAND intellectual property is provided for non-commercial use only. Permission is required from RAND to reproduce, or reuse in another form, any of our research documents for commercial use.
This product is part of the RAND Corporation conference proceedings series. RAND conference proceedings present a collection of papers delivered at a conference. The papers herein have been commented on by the conference attendees and both the introduction and collection itself have been reviewed and approved by RAND Science and Technology.
Increasing the Capacity of Freight Transportation

U.S. and Canadian Perspectives

David S. Ortiz, Brian Weatherford, Henry H. Willis, Myles Collins, Naveen Mandava, Chris Ordowich

Sponsored by the Paul Volcker Initiative for Public Service and the Canadian Consulate General of Los Angeles
Disruptions are increasing in North American supply chains. The capacity of freight transportation in North America is threatening economic competitiveness. Rising shipping costs, increasingly lengthy shipping times, increasingly variable transit times, and increasingly large inventories—all of these are evidence of constraints in the freight transport system.

As North American manufacturing and retail’s reliance on imports has increased, highway and rail infrastructure has been neither maintained nor expanded in critical places. Other factors, such as increased fuel prices, security requirements, border delays, and a shortage of truck drivers, are eroding the freight transport system’s performance. Consequently, shippers are stocking more parts and supplies, resorting to expensive backup transportation, and revisiting facility location decisions to cope with disruptions. Although consumers have yet to feel the effects, this “brittle” (i.e., sensitive to small disruptions) freight transport system, when coupled with continuing increases in demand, may lead to continentwide economic damage.

On February 16, 2006, in Santa Monica, California, more than 30 U.S. and Canadian stakeholders representing modal freight carriers; manufacturers; organized labor; and local, state, provincial, and federal governments met to discuss the declining performance of the North American freight transport system and to determine strategies for increasing freight transport capacity. Over the course of this one-day workshop, the participants identified examples of current and expected economic effects of capacity constraints on the freight transport system. They also highlighted specific physical, contractual, and regulatory constraints to the free movement of freight and charted a path toward addressing the most pressing issues through public-sector, private-sector, and joint action. This document summarizes the workshop’s discussions and the participants’ consensus.

Workshop participants partitioned constraints in North American freight transportation into categories characterized by duration, frequency, and effect. Table S.1 lists the constraints according to these characteristics and provides examples.

Intermittent constraints—that is, disturbances that briefly affect freight movement and are resolved without significant intervention—are typically well understood and can be accounted for in most freight transport markets. Examples of intermittent physical constraints are local weather, accidents, and other such random events that cause delays; examples of intermittent nonphysical constraints are increased security inspections, supply chain manager errors, and short-term labor availability.
Table S.1
Constraints in the North American Freight Transport System

<table>
<thead>
<tr>
<th>Type of Constraint</th>
<th>Duration</th>
<th>Frequency or Relative Probability</th>
<th>Effect</th>
<th>Physical Examples</th>
<th>Nonphysical Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermittent</td>
<td>Short</td>
<td>Sporadic</td>
<td>Local or firm</td>
<td>Weather Accidents Loading or unloading delays Random cargo inspections Rationing of rail and trucking capacity</td>
<td>Regulatory uncertainty Seasonal shipping trends Labor availability</td>
</tr>
<tr>
<td>Chronic</td>
<td>Medium</td>
<td>Often</td>
<td>Regional or sector</td>
<td>Rail capacity Port capacity Road capacity Single-mode and intermodal transfer capacity Border crossings</td>
<td>Labor disputes and contract renewals Security procedures Contractual limitations Managing freight transportation’s impact on communities Customs and trade compliance Safety compliance</td>
</tr>
<tr>
<td>Catastrophic</td>
<td>Long</td>
<td>Rare</td>
<td>National or macroeconomic</td>
<td>Natural disaster Terrorist attack</td>
<td>Labor actions and strikes</td>
</tr>
</tbody>
</table>

Chronic constraints are emerging issues that impose additional costs on freight transport systems. Of all the chronic constraints, the critical one is the physical capacity of the intermodal transport infrastructure, though congestion at border crossings is also a significant concern. And there are a large number of nonphysical constraints—for example, labor availability, environmental regulations, and post-9/11 security procedures. The expanding list of chronic constraints in the North American freight transport system suggests that it is becoming brittle and is in need of attention.

Catastrophic constraints are those that bring the freight transport system to a halt. Fortunately, these tend to occur relatively infrequently and often only affect isolated regions. The workshop participants identified two fundamental examples of events that could cripple the system: a natural disaster, such as an earthquake or hurricane that destroys transportation assets, and a terrorist attack that destroys key infrastructure or provokes greatly increased freight transport system security procedures.

The output of the workshop was an agenda for change. The first step in this agenda is to promote the most efficient use of current transport assets. Participants believe that enough additional capacity exists for the near term but that there are barriers to its most effective use. For the long term, participants recommend several steps. First, a unified view of the freight transport system must be reached so that policymakers will have a consistent framework for measuring the performance of North American freight transportation and assessing policy options. Next, to form the innovative public-private partnerships that will be needed to

1 Proposals for bolstering and expanding the freight transport system’s capacity are numerous, but, to date, none has motivated action. See Appendix D, the annotated bibliography, for brief descriptions of several recent plans for increasing North America’s freight transport capacity.
address the many constraints in the system, policymakers must understand the source of the current market's apparent failure to provide adequate private investment in freight transportation. Finally, efforts must show concrete progress on some of the issues to demonstrate the importance of collective action and build support for common interests in freight transport planning.

Without action, intermittent constraints in the system are likely to become more frequent, chronic constraints more acute, and the potential damage of catastrophic constraints more devastating. Workshop participants agreed that the net result of these constraints would not be marginally increased freight costs but, instead, degradation of the competitiveness of the North American economies.