Natural Gas as a Fuel for Freight Transport
A Workshop

May 13–14, 2014
Arnold and Mabel Beckman Conference Center
Irvine, California

Sponsored by
Transportation Research Board
Workshop Planning Committee

Barbara Ivanov, Washington State Department of Transportation, Chair
Michael Bomba, University of North Texas
Sara Clark, Transystems
Tim DeMoss, Port of Los Angeles
Michael Fischer, Cambridge Systematics
Tim Klein, U.S. Department of Transportation
Quon Y. Kwan, Federal Motor Carrier Safety Administration
Alex Landsburg, CSC
Renee Moilanen, Port of Long Beach
Melissa Shurland, U.S. Department of Transportation
Richard Stewart, University of Wisconsin–Superior
Ravindra Varma, California State Lands Commission
Roberta Weisbrod, Sustainable Ports
Akiko Yamagami, Southern California Association of Governments
Scott Brotemarkle, TRB

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www.TRB.org
The Transportation Research Board (TRB) Freight Systems and Marine Groups are pleased to present the Workshop on Natural Gas as a Fuel for Freight Transport at the Arnold and Mabel Beckman Conference Center of the National Academies in Irvine, California.

A structural shift in U.S. natural gas fuel production is under way, and the emergence of plentiful, low-cost natural gas fuels for freight carriers makes energy one of the most important trends affecting the nation’s freight systems. This workshop will bring natural gas fuel experts from around the country together with representatives from private industry, government, and academia to learn about issues related to adopting liquefied natural gas (LNG) and compressed natural gas (CNG) as a fuel for the movement of freight via the nation’s highways, waterways, and rail systems.

There are many uncertainties about how proposed governmental regulations and incentives may affect this emerging market. The diverse community of stakeholders gathered at this workshop will have the opportunity to develop concepts for research to support the development of informed public policy decisions and regulatory frameworks and of the necessary infrastructure and delivery systems that can enable market adoption of natural gas fuels in freight systems.

The most useful part of this workshop is building the professional relationships that support the work we do every day and throughout our careers. The agenda includes time to learn from each other, such as at the Tuesday evening reception and at the Wednesday tour of natural gas fueling facilities. Welcome to sunny southern California, and enjoy the workshop!

—Barbara Ivanov

Conference Planning Committee Chair and TRB Freight Group Chair
Washington State Department of Transportation

Thank You to Our Conference Supporters!

Gold Supporter:
University of Wisconsin–Superior

Bronze Supporter:
WesMor Cryogenic Companies
**Tuesday, May 13**

*Complimentary shuttle from Marriott Newport Beach to Beckman Center at 7:15 a.m. and 7:45 a.m.*

<table>
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<tr>
<th>Time</th>
<th>Location</th>
<th>Event Description</th>
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<tr>
<td>7:30 a.m.–5:30 p.m.</td>
<td>Atrium</td>
<td>Registration</td>
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<td>7:30 a.m.–8:30 a.m.</td>
<td>Dining Room</td>
<td>Breakfast</td>
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<td>8:30 a.m.–8:40 a.m.</td>
<td>Auditorium</td>
<td>Opening Remarks</td>
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<td>Barbara Ivanov, TRB Freight Group and Workshop Chair</td>
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<td>8:40 a.m.–9:20 a.m.</td>
<td>Auditorium</td>
<td>Keynote Address</td>
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<tr>
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<td>U.S. Natural Gas Supply Production Trends and Environmental Issues Associated with Natural Gas Fuels</td>
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<td>Benjamin Schlesinger, Benjamin Schlesinger and Associates</td>
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<td>9:20 a.m.–10:00 a.m.</td>
<td>Auditorium</td>
<td>Natural Gas Energy Sector Outlook</td>
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<td>Jason Tate, BP Energy</td>
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<td>10:00 a.m.–10:15 a.m.</td>
<td>Auditorium</td>
<td>Liquefied Natural Gas (LNG) and the Marine Sector</td>
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<td>Captain John Holmes, TRB Marine Board</td>
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<td>10:15 a.m.–10:45 a.m.</td>
<td>Auditorium</td>
<td>Transporting Compressed Natural Gas and LNG Fuels in the Marine Sector</td>
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<td>Peter Gallenberger, WesPac Energy Group</td>
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<td>10:45 a.m.–11:00 a.m.</td>
<td>Atrium</td>
<td>Morning Break</td>
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<td>11:00 a.m.–11:30 a.m.</td>
<td>Auditorium</td>
<td>Truck Fueling Station Infrastructure</td>
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<td>Andres Carlos, Clean Energy</td>
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<td>11:30 a.m.–Noon</td>
<td>Auditorium</td>
<td>The Challenges of the LNG Supply Chain for Fueling Marine Transportation</td>
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<td>Richard Stewart, University of Wisconsin–Superior</td>
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<td>Noon–1:30 p.m.</td>
<td>Atrium</td>
<td>Luncheon Panel: Creating the Necessary Market Conditions for Adopting Natural Gas as a Fuel for Freight Transport</td>
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<td>Michael Fischer, Cambridge Systematics, <em>presiding</em></td>
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<td><strong>Panelists</strong></td>
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<td>• Fred Silver, CALSTART</td>
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<td>• Matt Miyasato, South Coast Air Quality Management District</td>
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<td>• Vic La Rosa, Total Transportation Services, Inc.</td>
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Workshop on Natural Gas as a Fuel for Freight Transport

Melissa Shurland, presiding

- **Marine**
  Kurt Larsen, American Bureau of Shipping
- **Truck**
  Scott Perry, Ryder
- **LNG as Natural Gas Fuel For Locomotives and Associated Safety Issues**
  Phani Raj, Federal Railroad Administration

### 1:30 p.m.–3:00 p.m., Auditorium
**Fleet Adoption: Equipment**

### 3:00 p.m.–3:15 p.m., Atrium
**Break**

### 3:15 p.m.–4:30 p.m., Board Room, Huntington Room, Balboa Room, Newport Room
**Research Problem Statement Development**

Attendees will be assigned to one of four breakout groups addressing the following two areas:

1. Identifying research needed to inform public policy and regulatory decision making with respect to the use of natural gas, or
2. Identifying research needs related to the necessary infrastructure, delivery systems, and technology to supply natural gas to the freight system.

### 4:30 p.m.–5:30 p.m., Auditorium
**Breakout Group Dissemination and Discussion, Next Steps, Closing Remarks**
Barbara Ivanov, TRB Freight Group and Workshop Chair, presiding

- Sara Clark, TranSystems
- Michael Fischer, Cambridge Systematics
- Melissa Shurland, U.S. Department of Transportation

### 5:30 p.m.–6:30 p.m., Atrium
**Networking Reception** (drinks and light hors d’oeuvres provided)

*Complimentary shuttle from Beckman Center to Marriott Newport Beach at 6:15 p.m. and 6:45 p.m.*
Wednesday, May 14

Complimentary shuttle from Marriott Newport Beach to Beckman Center at 8:45 a.m.

9:00 a.m.–1:15 p.m.
Industry Tour
Bus leaves Beckman Center at 9:00 a.m. and returns attendees at 12:30 p.m. for lunch. Tour events include:

- Ryder Natural Gas Refueling Station and Maintenance Yard
- Clean Energy Natural Gas Refueling Facility

Complimentary shuttle provided from Beckman Center to Marriott Newport Beach for those not attending committee meetings.

1:30 p.m.–4:00 p.m.
TRB Committee Meetings

- International Trade and Transportation (AT020), Huntington Room
- Ports and Channels (AW010), Board Room
- Marine Environment (AW030), Balboa Room
- Marine Safety and Human Factors (AW040), Newport Room

Complimentary shuttle from Beckman Center to Marriott Newport Beach at 4:00 p.m.
Innovative Technologies for a Resilient Marine Transportation System
3rd Biennial Research and Development Conference

June 24–26, 2014
The National Academy of Sciences Building
Washington, D.C.

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Committee on the Marine Transportation System

15th Biennial Harbor Safety Committee and
Area Maritime Security Committee Conference:
Partnering for Safe, Secure, and Resilient Port Operations

August 25–27, 2014
Philadelphia, Pennsylvania

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