

**Triennial Strategic Plan
Committee on Transportation Energy
1 April 2013**

Committee Scope

“To consider factors that affect energy efficiency and energy use in passenger and freight transportation and the resulting impacts on energy consumption, energy security, greenhouse gas emissions, and related public concerns.”

1. Committee Future Outlook Statement

A. Primary factors influencing the transportation community within the committee’s scope over the short-term (one to three years)

Over the next one to three years our committee will be focused on transportation and its relationship to energy security, energy efficiency, and climate change. Climate change and energy security have been identified as key issues by the Executive Committee. In this strategic plan, we are emphasizing both mitigation and adaptation aspects of climate change. One of the complicating issues that we are tracking is the tradeoffs that may exist between energy security and climate change from the use of new unconventional hydrocarbon resources. Some of these (e.g. Canadian oil sands), may be more secure but higher in carbon. Our interests extend to the energy impacts and logistics of new energy supplies—including, for instance, dealing with pipeline and rail shipping of shale oil. We also are concerned about system effects, unintended consequences, and lifecycle impacts of any fuels, technologies, or policies aimed at mitigating carbon emissions or enhancing energy security. We will also be focused on the development of new passenger and freight transportation technologies (truck, rail and marine). The committee pays particular attention on the development, use, and barriers associated with the market penetration of electric vehicles (namely plug-in hybrid electric vehicles and battery electric vehicles). Lastly, the next few years will see the implementation of new GHG/CAFE regulations for passenger vehicles and new GHG and energy efficiency regulations for heavy-duty vehicles. We expect our committee to be heavily involved in assessing the performance of these new vehicle regulations, along with the energy and emission implications of possible fuel composition regulations.

We have entered a transitional era where demographics, climate change, energy costs, communication capabilities, and funding are influencing options and directions. The Energy Committee’s scope includes energy costs, which connects to funding (increased gasoline prices lead to higher mpg vehicles and lower VMT thus reducing funding from traditional sources). Climate change is directly related to our energy choices. Providing research and analysis on new transportation energy sources (electricity, natural gas, and hydrogen), their pros and cons, opportunities and challenges for deploying these new energy sources, and options for generating revenue from them would be a valuable addition to the transportation community.

B. Primary factors influencing the transportation community within the committee’s scope over the long-term (four to seven years)

Transportation energy use may transition from a gasoline and diesel powered sector to multiple energy sources; electricity, natural gas and potentially hydrogen. This transition and the technological transformation occurring with vehicles require stakeholders to better understand the rules, regulations and policies of these new transportation energy

sources. The technological advancements are likely to change the relationship of vehicle owners to the source of energy powering them, e.g. grid interoperable vehicles.

Over the next four to seven years our committee will continue to focus on transportation and its relationship to energy security, energy efficiency, and climate change. However, we expect that the climate change discussion will shift. Although mitigation will still be an important aspect for our committee, we believe there is a potential that adaptation will play an increasingly important role. The outcome of the latest IPCC report on climate change will provide additional insights into research needs in the 4-7 year timeframe. We also expect in the 4-7 year timeframe various geopolitical shifts that may affect petroleum availability and price, as well as the further development of non-conventional petroleum resources. There may be important transitions underway in energy markets relevant to transportation. With all of these changes come issues of uncertainty, risk, and economic and energy security.

Our committee stands ready to tackle new fuels and technologies with a focus on energy and environmental analysis; lifecycle analysis; system effects and unintended consequences; consumer behaviour and acceptance; and economic/market barriers. Similarly, we expect advancements in vehicle technologies (passenger and freight) and infrastructure which will necessitate additional research pertinent to our committee. Lastly, the 4-7 year timeframe gives us a retrospective window on a number of historic events that could be evaluated. For example, the year 2017 will represent the 25th year anniversary of the Energy Policy Act of 1992. We may explore a retrospective look at that policy, and others, to assess how well the country has done in meeting EPACT goals. This may also be a period of review of the Renewable Fuel Standard and consideration of alternative policy measures to replace petroleum or reduce carbon emissions.

An important research direction will be to better understand international vehicle ownership and usage trends and the impact on global oil markets as well as energy/climate outcomes. International experience with policies to promote alternative fuels (and air quality as a driver of transportation policy in developing regions) will allow for cross-national comparisons and experience sharing. A stronger understanding how the international situation is evolving will help to assess prospects for an increasing domestic (and regionally secure) supply of energy in the United States (and the rising dependence of other regions).

Technological developments in energy generation and distribution are likely to outpace the transportation sectors ability to adapt. Presently the over 80,000 plug in capable electric vehicles on the road are not paying gasoline tax at either the state or federal level. In four to seven years the number of vehicles that do not pay gasoline tax is likely to grow. Monitoring the growth and developing connections with new transportation energy providers (e.g. electric and natural gas utilities) to establish new mechanisms to generate revenue and to share our understanding of travel behaviour (where and when are people likely to charge) would be a beneficial addition.

C. Cross-cutting developments or issues

There are a number of issues in which our committee will be involved that cut across many other committees. These issues include: (1) climate change; (2) new fuel development; (3) freight systems; (4) travel demand management; (5) new vehicle technology; (6) roadway and infrastructure; (7) energy efficiency regulation, and (8) the

intersection of fuel use and air quality with respect to new regulations and technologies. In particular the growing development of vehicle automation technology cuts across many TRB committees and issues and has the long-run potential to make great changes in transportation energy use by improving driving energy-efficiency while lowering the time and cost of driving, and by providing mobility access to those who cannot drive. Automated vehicles may completely change land use patterns, increase sprawl thereby increasing travel demand and energy consumption. On the other hand, autonomous vehicles may change traffic flow and make eco-driving standard practice, thereby reducing fuel and energy consumption. Our committee should stand at the fore-front of this discussion.

Another cross-cutting issue is megaregions. Megaregions will become more relevant as autonomous vehicles may further increase commute distance, and as grid interoperable vehicles shift the geographical scale of energy demand. The policy making, planning, and designing at the megaregion level instead of at the municipality level or state level could change the dialogue about transportation energy and the interactions between the transportation and utility sectors.

Developing an on-going forum for the transportation sector and utilities (natural gas and electric) to dialogue about transportation energy use would be helpful. This could be done at the ISO level or through some of the national organizations like NASEO or NARUC.

2. Committee Plan

a. Identification of emerging, critical, and cross-cutting issues **within the committee scope**

Climate change mitigation and adaptation; new passenger and freight vehicle technology; non-conventional petroleum fuels; cross-cutting issues with freight systems, connected vehicles, and travel demand management.

b. Identification of emerging, critical, and cross-cutting issues **outside but related to the committee scope that provide opportunities for liaison and collaborative efforts;**

Travel demand management; critical infrastructure; integration of rail, ship, and truck systems projects, activities and products that the committee will undertake during the next three years to address the emerging, critical, and infrastructure for alternative fuel market penetration, and cross-cutting issues identified above.

c. Strategies for attaining/maintaining balanced diverse membership

We will continue to work with committee members and friends to identify a diverse group of researchers and practitioners who can support the committee. This will be done explicitly through solicitations at least once a year when new membership is needed. In addition, we will develop a "diversity matrix" for the committee to identify where we may have gaps in the expertise, gender, age, race, and other factors of diversity. That matrix will help guide committee membership selection in the future. We will also develop a Membership Subcommittee that will focus on this issue.

- d. Strategies to encourage significant involvement by the committee's Young Members, state DOT members, and other key constituents, both during committee meetings and at other times;

We will encourage involvement by young members and key constituent groups by reaching out to them with committee volunteer opportunities such as helping lead the research needs statements (see below).

- e. committee's communication activities, and efforts to provide assistance and technology transfer to the transportation community;

We will continue to use our committee website <http://cta.ornl.gov/TRBenergy/> as a primary access portal and repository of committee's research and history.

- f. research directions, results, and needs or gaps;

We will be supporting those research activities which directly help us with our strategic issues and with the cross-cutting issues mentioned above

3. Plan for maintaining and augmenting the Research Need Statements (RNS) database (<http://rns.trb.org/>);

We will engage with committee members at our summer meetings and by electronic communications (email, webinars) on a focused RNS update process. Key to this process will be to identify one or more individuals to lead this process. The committee Chair will contact self-identified and targeted individuals such as young members and those from key constituent groups.

We will also look for an individual to lead an outreach effort to better incorporate international representation in the committee itself and topics under consideration, with the goal of strengthening research needs from cross-national comparisons of transport energy experiences (e.g. experience with particular policies or alt fuels initiatives, trends in vehicle ownership, comparisons of travel surveys and their application to energy questions).

3. Committee History

Annual Meeting Sessions	2010	2011	2012
Number of paper or conference sessions at the last annual meeting	2	3	5
Number of workshop sessions at the last annual meeting	1	1	2
Number of poster sessions at the last annual meeting	2	2	1
Number of co-sponsored sessions at the last annual meeting	5	4	2
Number of published meetings at the last annual meeting	3	3	3

Paper Reviews	2010	2011	2012
Number of papers reviewed/published	23/5	23/6	30/7
Number of papers reviewed/pub – Climate Change Sub- committee		17/3	21/5
Number of papers reviewed/pub – International Sub- committee			1/0

Summer Meetings

“Rethinking Energy and Climate Strategies for Transportation”

Joint Meeting of TRB Standing Committees on Transportation Energy and Alternate Fuels & Technologies, Hosted by the Institute of Transportation Studies at the University of California, Davis, Tuesday, 30 August 2011, 12noon to 2:00pm
Asilomar Conference Center, California

“Transportation and Climate Policy”

Joint Meeting of TRB Standing Committees on Transportation Energy and Alternate Fuels & Technologies, Hosted by the Institute of Transportation Studies at the University of California, Davis, July 28 – 31, 2009, Asilomar Conference Grounds
Pacific Grove, California

Annual Meeting Podium Sessions (2010-2012)

565 (CGS12-032)

Tuesday, January 24, 2012, 1:30pm- 3:15pm, Hilton, Georgetown East

Climate Change Adaptation Practices for Ports, Airports, and Freight Terminals

Jean-Daniel Maurice Saphores, University of California, Irvine; Coralie L. Cooper, Volpe National Transportation Systems Center, presiding

Sponsored by Committee on Transportation Energy; Committee on Ports and Channels; Committee on Marine Environment; Committee on Environmental Impacts of Aviation; Committee on Trucking Industry Research; Committee on Intermodal Freight Transport

387 (CGS12-045)

Monday, January 23, 2012, 3:45pm- 5:30pm, Hilton, Lincoln East

Energy Security and Unconventional and Alternative Liquid Fuels: Canadian Oil Sands, U.S. Shale Oil Formations and Compressed Natural Gas, and Biofuels--What Does This Mean for the Future?

Gilbert R. Jersey, ExxonMobil Research and Engineering; Paul N. Leiby, Oak Ridge National Laboratory, presiding

Sponsored by Committee on Transportation Energy; Committee on Alternative Transportation Fuels and Technologies

793 (CGS12-048)

Wednesday, January 25, 2012, 4:30pm- 6:00pm, Hilton, Columbia Hall 8

Greenhouse Gas and Environmental Impacts of Shale Gas

Michael Q. Wang, Argonne National Laboratory, presiding
Sponsored by Committee on Transportation Energy; Committee on Alternative
Transportation Fuels and Technologies

229 (CGS12-049)

Monday, January 23, 2012, 8:00am- 9:45am, Hilton, Georgetown West

**Macroeconomic Impacts of Transportation Energy Research, Innovation, and
Regulation: Where Are the Jobs? Part 1--Alternative Fuels and State Carbon Plans
(Part 2, Session 283)**

Paul N. Leiby, Oak Ridge National Laboratory, presiding

Sponsored by Committee on Transportation Energy; Committee on Alternative
Transportation Fuels and Technologies; Committee on Transportation Economics; Task
Force on Climate Change and Energy

283 (CGS12-050)

Monday, January 23, 2012, 10:15am-12:00pm, Hilton, Georgetown West

**Macroeconomic Impacts of Transportation Energy Research, Innovation, and
Regulation: Where Are the Jobs? Part 2--Fuel Economy Standards and Other
Green Energy Initiatives (Part 1, Session 229)**

Jonathan Rubin, University of Maine, presiding

Sponsored by Committee on Transportation Energy; Committee on Alternative
Transportation Fuels and Technologies; Committee on Transportation Economics; Task
Force on Climate Change and Energy

376 (KFS11-011)

Monday, January 24, 2011, 3:45pm- 5:30pm, Hilton, Columbia Hall 6

**Reducing Energy Use and Emissions from the Freight Sector: Technical and
Operational Advancements Related to Heavy-Duty Vehicles**

James J. Winebrake, Rochester Institute of Technology, presiding

Sponsored by Committee on Transportation Energy; Committee on Transportation and
Air Quality; Committee on Freight Transportation Economics and Regulation

544 (KFS11-014)

Tuesday, January 25, 2011, 1:30pm- 3:15pm, Hilton, Columbia Hall 6

Transportation Energy: Climate Change and Energy Security--Role of Biofuels

David L. Greene, Oak Ridge National Laboratory, presiding

Sponsored by Committee on Transportation Energy; Committee on Alternative
Transportation Fuels and Technologies

697 (KFS11-016)

Wednesday, January 26, 2011, 10:15am-12:00pm, Hilton, Jefferson East

Beyond Petroleum, Corn, and Soybeans: Renewable Fuels for the 21st Century

Jonathan Rubin, University of Maine, presiding

Sponsored by Committee on Transportation Energy; Committee on Alternative
Transportation Fuels and Technologies

EKW11-003

Sunday, January 23, 2011, 9:00am-12:00pm, Shoreham, Hampton

Environmental Impacts of High-Speed Rail

Lee Schipper, University of California, Berkeley, presiding

Sponsored by Committee on Passenger Rail Equipment and Systems Integration;
Committee on Intercity Passenger Rail; Committee on Transportation Energy

KFS11-013

Monday, January 24, 2011, 1:30pm- 3:15pm, Hilton, Columbia Hall 6

The “Green” and the “Green” of Biofuels: Considering Cost-Effectiveness and Financial Implications of Biofuels Alongside Environmental Benefit

Damon Fordham, Project Performance Corporation, presiding

KFS11-015

Wednesday, January 26, 2011, 8:00am- 9:45am, Hilton, Columbia Hall 8

Electric Vehicle Charging Infrastructure: Where, When, and How?

Reid Heffner, Booz Allen Hamilton, presiding

RCS11-023

Wednesday, January 26, 2011, 4:30pm- 6:00pm, Marriott, Thurgood Marshall West

Vehicle Electrification via Wireless Power Transfer: Real-World Feasibility and Benefits

Jeff Muhs, Energy Dynamics Laboratory, presiding

351 (KFS10-042)

Monday, January 11, 2010, 3:45pm- 5:30pm, Marriott, Maryland B

Trade-offs and Complementarities Between Energy Security, Carbon Mitigation, and Sustainability

Jonathan Rubin, University of Maine, presiding

Sponsored by Committee on Transportation Energy; Committee on Alternative Transportation Fuels and Technologies

204 (KFS10-043)

Monday, January 11, 2010, 8:00am- 9:45am, Marriott, Maryland B

Low-Carbon and Renewable Fuel Policy: Issues and Updates

Jonathan Xavier Weinert, Chevron, presiding

Sponsored by Committee on Transportation Energy; Committee on Alternative Transportation Fuels and Technologies

JCS10-012

Tuesday, January 12, 2010, 10:15am-12:00pm, Shoreham, Hampton

U.S. Nuclear Power Generation: Present, Future, and Implications for Transportation

Joseph Gary Lanthrum, Radioactive Material Transportation and Storage Consulting, presiding

Sponsored by Committee on Critical Transportation Infrastructure Protection; Committee on Transportation of Hazardous Materials; Task Force on Climate Change and Energy; Committee on Transportation Energy

KFP10-018

Wednesday, January 13, 2010, 9:30am-12:00pm, Hilton, International Center

How Do Travelers Value Energy Efficiency and the Environment? -Some Key Insights

Ram M. Pendyala, Arizona State University, presiding

KFS10-025

Tuesday, January 12, 2010, 1:30pm- 3:15pm, Marriott, Maryland B

Beyond LDVs: Energy Use and GHG Emissions from Heavy-Duty Vehicles

Peter Reilly-Roe, Reilly-Roe & Associates Ltd.; Reid Heffner, Booz Allen Hamilton, presiding

KFS10-041

Tuesday, January 12, 2010, 3:45pm- 5:30pm, Marriott, Maryland B

Vehicle Electrification: How Close Are We?

Danilo J. Santini, Argonne National Laboratory, presiding

TPS10-015

Wednesday, January 13, 2010, 2:30pm- 4:00pm, Shoreham, Diplomat

Performance-Based Reauthorization, Bolder and More Innovative, Part 2: Data Issues (Part 1, Session 466; Part 3, Session 708)

Scott Drumm, Port of Portland, presiding

Annual Meeting Workshops (2010-2012)

187 (CGW12-002)

Sunday, January 22, 2012, 1:30pm- 4:30pm, Hilton, Lincoln East

Urban and Regional On-Road Transportation Greenhouse Gas Mitigation Options and Strategies Analysis

Lewison Lee Lem, Jack Faucett Associates, Inc., presiding

Sponsored by Committee on Transportation Energy; Committee on Climate Change; Committee on Alternative Transportation Fuels and Technologies; Committee on Transportation and Sustainability

192 (CGW12-003)

Sunday, January 22, 2012, 1:30pm- 5:00pm, Hilton, Lincoln West

Following in Lee Schipper's Footsteps in Pursuit of Good Travel and Fuel Economy Data: Status of U.S. Travel Data and Options for Improvement

Steven Winkelman, Center for Clean Air Policy; Craig Raborn, Duke University, presiding

Sponsored by Committee on Transportation Energy; Task Force on Climate Change and Energy; Committee on Alternative Transportation Fuels and Technologies; Committee on Transportation and Sustainability

171 (KFW11-007)

Sunday, January 23, 2011, 1:30pm- 4:30pm, Hilton, Columbia Hall 8

Can We Have a Low-Carbon Global Transport System in 2050?

Lee Schipper, University of California, Berkeley, presiding

Sponsored by Committee on Transportation Energy; Task Force on Climate Change and Energy; Committee on Transportation in the Developing Countries; Committee on Alternative Transportation Fuels and Technologies; Committee on Transportation and Sustainability; Committee on International Activities

713 (KFW10-007)

Thursday, January 14, 2010, 8:00am-12:00pm, Marriott, Maryland B

How to Achieve a Global Low-Carbon Transport System by 2050

Lee Schipper, University of California, Berkeley, presiding

Sponsored by Committee on Transportation Energy