



Technical Program

Itinerary

I Day 1 — June 14, 2004

I Day 2 — June 15, 2004

I Day 3 — June 16, 2004

I Day 4 — June 17, 2004

Papers

Awards

Social Program

Day 1 • Monday, June 14, 2004

08:45 - 10:00 **1 Plenary — Setting Sustainable Transport — The Political Perspective**

1. Canadian Perspective John Efford, Minister of Natural Resources Canada (invited)
2. International View Marianne Haug, Director, Office of Energy Efficiency, Technology R&D, International Energy Agency (Invited)
3. US Department of Energy Perspective Senior US Department of Energy Official TBD

Chair: John Marrone, Natural Resources Canada

Parallel Session A

Vehicles and Engine Technologies: A look at emerging vehicle, engine and exhaust treatment technologies to address the worldwide toxic and greenhouse emission problems. Presentations from several International Energy Agency (IEA) Implementing Agreements will illustrate the global extent of R&D in this area.

Parallel Session B

Fuels, Formulation Infrastructure, Storage and Production: Discussions on the issues and developments in clean and substitute transportation fuels that will play a major role in sustainable transport. The IEA Implementing Agreements—Hydrogen, Advance Motor Fuels and Bio-Energy—have interesting programs in this area that will be addressed along with US and Canadian efforts.

Parallel Session C

Policies, Program, Socio-economics, Transport Systems: Analysis and case studies of policy development, institutional requirements, economic and systems aspects, and implementation strategies to achieve sustainable transport.

10:30 - 12:00 **2A Overview and Outcomes of Government R&D Programs Supporting Clean Vehicle and Engine Technologies**

1. Overview of DOE's Freedom Car, 21st Century Truck and Fuel Cell Programs Speaker: Steve Goguen, Department of Energy, USA
2. TBD Peter Finckh, International Energy Agency, Switzerland
3. Advanced Technologies & Fuels Canada Rodney Semotiuk, ATF Canada

Chair: Natalie Shea, Natural Resources Canada

2B Biodiesel Fuel: Applications and Analysis

1. Novel Ignition Promotes for Diesel Fuels Nicholas Schulz, JGS Research Co. USA
2. Life Cycle Analysis of Biodiesels Jim Rollefson, National Research Council of Canada
3. Cold Flow Properties of Biodiesel Stuart D. Porter, Sunoco Inc., Canada

Chair: Matthew Thornton, National Renewable Energy Laboratories, USA



2C Forecasting the Energy Future

1. Auto 21 Peter Frise, University of Windsor, Canada
2. Towards Environmentally Sustainable Transport – Challenges, Implications on Emissions, Fuels and Policy – The OECD Guidelines Peter Wiederkehr, Organization for Economic Cooperation and Development, France
3. Energy Constraints and Transport Sustainability – Richard Gilbert, Centre for Sustainable Transportation, Canada

Chair: Peter Wiederkehr, Organization for Economic Cooperation and Development, France

13:30 - 15:00 3A Solutions to the On-Board Storage of Gaseous Fuels and Infrastructure

1. Optimizing Compressed Hydrogen Storage with Advanced Lightweight Composite Cylinder Technology Don Fraser, Dynetek Industries Ltd, Canada
2. DOE Solutions JoAnn Milliken, Department of Energy, USA (invited)
3. Safety of Compressed Gas Fuel Systems for Natural Gas and Hydrogen Craig Webster, Power Tech, Canada

Chair: Richard Fry, Natural Resources Canada

3B The IEA Advanced Motor Fuels Agreement — Addressing Standardization Alternative Fuels, Low-Temperature Particulates and Application Strategies

1. Low Temperature Particulates from Alternative Fuels Nils-Olof Nylund, VTT Processes/Engine Technology, Finland
2. Standardization of Alternative Fuels Björn Rehnlund, Atrax, Sweden
3. Biodegradable Lubricants for Road Vehicles Jesper Schramm, Technical University of Denmark

Chair: Nils-Olof Nylund, VTT Processes/Engine Technology, Finland

3C Policy and Transportation Planning for Emissions Reduction

1. Integrating Transportation Planning and Air Quality Regulation — of the Conformity Regulation in the USA Jonathan Makler, IBI Group Inc., USA
2. Climate Policy for Civil Aviation: Actors, Policy Instruments and the Potential for Emissions Reductions Andreas Pastowski, Wuppertal Institute for Climate, Environment, Energy, Germany
3. An Economic Analysis of Various Hydrogen Fuelling Pathways Eric Hutton, Ernst & Young, Canada

Chair: Tabitha Takeda, Natural Resources Canada

15:30 - 17:00 4A Technology Issues, Developments and Impacts of Hybrid Vehicle Systems

1. Evaluating Future Impacts of Electric Drive Vehicles James Winebrake, Rochester Institute of Technology, USA
2. Presentation of the IEA Hybrid and EV Implementing Agreement Work Frans Koch, IEA Agreement for Hybrid Vehicles
3. Hybrid Technology for the Rail Industry Frank Donnelly, RailPower Technologies Corp, Canada

Chair: Frans Koch, IEA Agreement for Hybrid Vehicles

4B Heavy-duty Emissions, Health Effects and After-treatment Performance

1. Health Risk Assessment of High-Cetane Ethers Ih Chu, Health Canada
2. Performance and Durability Evaluation of Continuously Regenerating Particulate Filters on Diesel Powered Urban Buses at NY City Transit Deborah Rosenblatt, Environment Canada
3. HD Vehicle Emissions Michael P. Walsh, International Consultant, USA

Chair: Ih Chu, Health Canada



4C Reducing Pollution in Urban Areas — Case Studies on Programs and Policies

1. **Air Pollution in Cities and Transportation Policies; Italian Case Studies** P.Villani, APAT - Politecnico Milano
 2. TBD
 3. **Modelling the Impacts of Alternative Policy Options to Reduced Greenhouse Gas Emissions from Urban Freight Transport - A Sydney Case** Michael Taylor, Transport Systems Centre, University of South Australia
- Chair: Peter Finckh, International Energy Agency, Switzerland**

Day 2 • Tuesday, June 15, 2004

Gas Emissions from Urban Freight Transport - A Sydney Case Michael Taylor, Transport Systems Centre, University of South Australia

Chair: Peter Finckh, International Energy Agency, Switzerland

08:30 - 10:00 5 Plenary — Worldwide Perspectives

1. **An International Auto Manufacturer's Perspective** Ben Knight, Honda, USA
 2. **Clean Transport: A Global Perspective on Motor Vehicle Emissions Through 2030** Peter Wiederkehr, Organization for Economic Cooperation and Development, France
- Chair: Marianne Haug, International Energy Agency, France (Invited)**

10:30 - 12:00 6A Transportation Emissions Reduction

1. **Comparison of Emissions from Conventional Diesel and Diesel Electric Hybrid Urban Buses** Norman Meyer, Environment Canada
 2. **Medium-Duty Natural Gas Engines Can Meet 2007 Standards Today** Alex Lawson, Teleflex GFI, Canada
 3. **N2O Emissions From Future Diesel Engines** Stuart Neill, National Research Council Canada
- Chair: Stuart Neill, National Research Council Canada**

6B Panel Discussion: Pathways to a Hydrogen Fuelled Transportation System

A panel of experts will discuss what is needed to achieve the ideal renewable hydrogen fuel infrastructure. The discussion will address various mechanisms to ensure an ordered development of the hydrogen fuel infrastructure. (i.e. off-site or on-site reforming of methanol or natural gas, home refuelling, etc.)

Panel members: Richard Fry, Natural Resources Canada; Matthew Fairlie, Stuart Energy, Canada; Nils-Olof Nylund, VTT Processes, Finland; William Hoagland, USA

Chair: Nick Beck, Natural Resources Canada

6C Strategic Transportation Planning for Cleaner Air

1. **North American Transportation Technology and Fuels Study—2050** Paul Khanna, Department of Natural Resources, Canada
 2. **The IEA World Energy Outlook** Lew Fulton, International Energy Agency, France
 3. **Japan Forecasts – Japan Energy Forecast** Yukari Yamashita, Institute of Energy Economics, Japan
- Chair: Peter Reilly-Roe, Natural Resources Canada**

13:30 - 15:00 7A The Worldwide Emissions Problem

1. **Toxics from HD Engines** William Slodowske, Navistar, Canada
 2. **On-Road Motor Vehicle Emissions from Around the World** Donald Stedman, University of Denver, USA
 3. **Marine Emissions Control Technologies to Lower Greenhouse Gas (GHG) Emissions** Ernst Radloff, Transportation Development Centre (TDC), Canada
- Chair: Greg Rideout, Environment Canada**



7B Advanced Petroleum-based Fuels — Diesel Issues

1. APBF-DEC Overview and Heavy-Duty NOx Adsorber/DPF Project Shawn Whitacre, National Renewable Energy Laboratory, USA
2. APBF-DEC Light-Duty NOx Adsorber/DPF Projects Matthew Thornton, National Renewable Energy Laboratory, USA
3. APBF-DEC Urea SCR/SPF Project Magdi Khair, Southwest Research Institute, USA

Chair: Shawn Whitacre, National Renewable Energy Laboratory, USA

7C Implementation Strategies, Programs and Policies

1. Successful Implementation of Fuel Awareness Programs in the Forest Transportation Sector Jan Michaelson, Forest Research Institute of Canada
2. Deployment Strategies for Hybrids Frans Koch, IEA Agreement for Hybrid Vehicles
3. Transition to Alternative Fuels and Advanced Vehicles Technologies in the 2003-2005 Timeframe Art Vatsky, Future Fuels, USA

Chair: Peter Cunz, International Energy Agency, Switzerland

15:30 - 17:00 8A Fuel Additives, Lubrication Systems for Better Performance and Retrofitting of Existing Diesels for Better Vehicle Performance

1. The Use of Single, Medium-Speed Diesel Research Engine for Railway Diesel Fuel Additive Evaluations Fan Su, Engine System Development Centre, Inc., Canada

Day 3 • Wednesday, June 16, 2004

2. Designing Lubricants and Lubricant Systems for Optimum Performance Bill Chamberlin, The Lubrizol Corp, USA
3. After Market Conversion/Retrofit of Diesel Dale McKinnon, Manufacturers of Emission Controls Association, USA (invited)
4. Increased Fuel Efficiency of Freight Trains by the Use of an Innovative Freight Car Truck Roy E. Smith, RESCO Engineering, Canada

Chair: Andy Beregszaszy, Natural Resources Canada

8B A Look at Infrastructure Developments Necessary for the Introduction and Use of Sustainable Transport Fuels

1. TBD Ry Smith, Stuart Energy Systems, Canada
2. Compressed H2 Mark Epp, IMW, Canada
3. TBD Per Carstedt, BioAlcohol Fuel Foundation

Chair: Rodney Semotiuk, Advanced Technologies & Fuels Canada

8C Transportation Efficiency — A System Approach to Sustainable Transportation and Fuel Distribution

1. Practical Measures to Improve Fuel Efficiency and Reduce Environmental Impacts on Road Freight Transport Operations Michael Coyle, University of Huddersfield, UK
2. Linking Environmental Modelling with Transport Demand Modelling Strategic Environmental Assessment in Transport Network Planning Lex Brown, Griffith University, Australia
3. The TruckTrain Concept and Derivatives Philip N. Mortimer, Advanced Railway Research Centre University of Sheffield, UK

Chair: Vittoria Battista, Transport Canada

08:30 - 10:00 9 Plenary — Attaining Sustainability in the Transportation Sector

1. US Perspectives – Speaker TBD
2. Mexican Perspectives – Speaker TBD
3. European Perspectives – Speaker TBD

Chair: Nick Beck, Natural Resources Canada



10:30 - 12:00 **10A Hydrogen and Fuel Cells for Transportation**

1. Advancements in Fuel Cell Power Modules Rob del Core, Hydrogenics, Canada
2. TBD David Martin, EnergyQBD Inc., Canada
3. Self Adaptive Internal Combustion Control for Hydrogen Mixtures Using PiezoElectric Transducers for Dynamic Cylinder Pressure Monitoring Raymond Courteau, Université du Québec à Trois-Rivières, Canada

Chair: Vesna Scepovic, Natural Resources Canada

10B Highlights of the IEA Hydrogen Implementing Agreement R,D&D: 1999

1. Task 14/15: Photoelectrolytic and Photobiological Trygve Riis, Chairman, IEA Hydrogen Implementing Agreement, The Research Council of Norway
2. Task 16: Hydrogen from Carbon Containing Materials Elisabet Fjermestad Hagen, Norsk Hydro ASA, Norway (invited)
3. Task 17: Solid and Liquid State Hydrogen Storage Material—IEA Hydrogen Task 17 Gary Sandrock, SunaTech Inc., USA
4. Task 18: Integrated Systems Evaluation Services Mij, Inc. Canada

Chair: Mary-Rose de Valladares, USA

10C Panel Discussion: Issues and Experiences of Transit Properties Using Environmentally Friendly Fuels

Richard Cromwell, recently retired General Manager of Sunline Transit, will lead a distinguished panel of transit specialists to discuss environmentally friendly bus fuels.

Dennis Smith, Department of Energy, USA

Chair: Richard Cromwell, Cromwell and Associates, USA

13:30 - 15:00 **11A What's New in Electric Vehicle Development?**

1. Lessons Learned: The Miami Beach Electric Bus Story John Powell, Electric Transit Vehicle Institute USA
2. Multi-Mode Heavy Duty Hybrid Bus Malcolm Shemmens, Battery Engineering & Testing Corp, USA
3. TBD Paul Scott, ISE Corp, USA

Chair: Stephanie Lines, Natural Resources Canada

11B Infrastructure Developments for LNG

1. Hydrogen Infrastructure: Requirements and Issues Marianne Mintz, ANL, USA
2. Short to Medium Supply Options for LNG Used as a Transportation Fuel Alison Grigg, Fuel Cells Canada

Chair: Ralph McGill, Oak Ridge National Laboratory, USA

11C Policies for GHG Reduction for New Vehicles

Day 4 • Thursday, June 17, 2004

1. TBD David Greene, Oak Ridge National Laboratory, USA
2. Deploying New Technologies and Efficiency Measures to Reduce Passenger Car CO2 Emissions Peter Wilbers, Novem, The Netherlands

Chair: Lew Fulton, International Energy Agency, France

15:30 - 17:00 **12A Panel Discussion: Heavy Duty Natural Gas Engines in a Clean Diesel World — Where do They All Fit?**

Nils-Olof Nylund, VTT Processes Engine Technology, Finland; Warren Slodowske, Navistar, Canada; Patric Ouelette, Westport, Canada; John Walsh, New York City Transit Authority, USA; Vinod Duggal, Cummins Engine Company Inc., USA

Chair: Alex Lawson, Teleflex GFI, Canada



12B Biofuels — Presentations on Production and Environmental Benefits

1. Biodiesel Fuel from Waste Fats and Oils David Boocock, University of Toronto, Canada
 2. Advanced Processes for Conversion of Lignocellulosic Biomass to Ethanol John Jechura, National Renewable Energy Laboratory, USA
 3. IEA Biofuels Work Low Fulton, International Energy Agency, France Paul Nichols, Natural Resources Canada
- Chair: Ed Hogan, Natural Resources Canada**

12C Successful "Future" Fuel Demonstrations

1. TBD
 2. TBD Camil Lagace, Sine Nomine Marketing Inc., Canada
 3. TBD Paul Nichols, Natural Resources Canada
- Chair: Christine Paquette, Natural Resources Canada**

09:00 - 10:30 13 Plenary — World Business Council on Sustainable Development

1. Sustainable Mobility Project Willy Tomboy, Toyota Motor Europe
 2. TBD Fred Cartwright, General Motors, USA
 3. Hybrid Fuel Cell Utility Fleets as a Step Toward Improving Urban Air Quality Pierre Rivard, Hydrogenics, Canada
 4. Utility Scale Wind-Hydrogen – What Will Home Grown "Oil" Cost? Paul Scott, ISE Corporation, USA
 5. TBD Lee Schipper (invited)
- Chair: Tom Gross, USA**

11:00 - 12:30 14 Panel Discussion: Sustainable Mobility – A Reality or Pipedream?

1. TBD
- Moderator: Tom Gross, USA**

