CANADA'S PUBLIC POLICY FORUM
DES POLITIQUES PUBLIQUES DU CANADA

REDUCING TRANSPORTATION GHG EMISSIONS IN CANADA

A Dialogue on a Lower Carbon Future

VANCOUVER ROUNDTABLE REPORT

The Public Policy Forum is an independent, not-for-profit organization dedicated to improving the quality of government in Canada through enhanced dialogue among the public, private and voluntary sectors. The Forum's members, drawn from business, federal, provincial and territorial governments, the voluntary sector and organized labour, share a belief that an efficient and effective public service is important in ensuring Canada's competitiveness abroad and quality of life at home.

Established in 1987, the Forum has earned a reputation as a trusted, nonpartisan facilitator, capable of bringing together a wide range of stakeholders in productive dialogue. Its research program provides a neutral base to inform collective decision making. By promoting information sharing and greater links between governments and other sectors, the Forum helps ensure public policy in our country is dynamic, coordinated and responsive to future challenges and opportunities.

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Background

Canada's Public Policy Forum has undertaken a project to examine the potential for greenhouse gas (GHG) emissions reductions in Canada's transportation sector, with a focus on road transportation. With the sponsorship of the Canadian Fuels Association, the Forum has launched *Reducing Transportation GHG Emissions in Canada: A Dialogue on a Lower Carbon Future*. This project includes a basic literature review of the issue and a series of dialogue sessions, each of which examine a specific element of the highly complex policy environment surrounding GHG emission reduction efforts.

On June 11th, 2013, the Forum convened a roundtable discussion in Vancouver to explore some of the challenges and opportunities around fuel switching and fuel alternatives as strategies for reducing GHG emissions. This session included leaders and experts from across sectors, including industry, associations, academia, non-governmental organizations and public sector leaders from the municipal, regional, provincial and national levels.

The roundtable featured two experts, Len Coad of the Canada West Foundation and Bob Oliver of Pollution Probe, who provided brief commentaries related to their extensive knowledge of this field. Discussions centred on two areas: fuel switching and alternatives, and low-carbon fuel strategies in Canada.

Context

The continued increase in GHG emissions on a global scale, is a major concern given the associated environmental, social and economic impacts. The interaction of the many factors which contribute to GHG emissions creates a very complex system for which no simple emissions reductions solutions exist.

What we know for certain is that the transportation sector is a leading contributor to Canadian and global GHGs. Approximately 25% of Canada's GHG emissions are transportation-related; this figure is even greater if certain fuel-production emissions are factored in. While this is in line with global averages for developed countries, it does suggest that this sector is a prime target for efforts to reduce GHGs. However, the sector is also an inextricable component of the Canadian way of life. Canada is a geographically large, climatically cold country. We are a major trading and exporting nation. All of these factors make transportation essential in our country.

Any efforts to reduce GHGs from the Canadian transportation sector must consider these complex relationships. Focus should be placed on achieving the greatest emissions reductions that are most economically achievable through innovative means. There is great potential for emissions reductions from the transportation sector, but it will require collaboration and leadership. New partnerships will be needed, and creating them requires frank and open discussion about the issues. The purpose of this project, including sessions on vehicle technology and transportation infrastructure which will follow later in the year, is to provide a forum for such dialogue.

Fuel Switching and Alternatives

Presentation

The session began with remarks from Len Coad of the Canada West Foundation. Mr. Coad placed the challenge of fuel switching in a broader market context. In terms of energy density, price and ease of access, it is very difficult for new alternative fuels to compete with traditional fuels. Current infrastructure is designed almost exclusively to deliver gasoline and diesel to consumers. Internal combustion engines are designed to burn these fuels, and refineries are designed to produce them. Any effort for fuel switching in the name of lower emissions faces an uphill battle.

This is not to say options do not exist – there are simply complicating factors. Biofuels, for instance, while having lower emissions profiles, also have lower energy density. Liquefied and compressed natural gas (LNG/CNG) are also potential options, and indeed serve as mainstay fuels in other countries. But they are only now the subject of early and growing focus in Canada. Hybrid vehicles are more widely accepted by the market and present substantial emissions reductions, but still require gasoline. Vehicles that run purely on electricity currently lack the range the market demands. Hydrogen is also an option, but infrastructure requirements are substantial. Some of these options also carry increased cost implications.

The best option may be to focus efforts on areas of greatest potential reduction within current capabilities. Commercial fleets may prove more receptive than individual car owners to fuel source changes, and better able to adapt to the infrastructure needs. The issue lies in encouraging fleet owners to invest the necessary funds to convert their vehicles. The broader consumer market will be more challenging. To see a switch to alternatives, demand for these new fuels will have to be substantial, and price, rather than carbon emissions, will likely be the key determinant of most consumer choice in the matter.

Discussion

The discussion was guided by a series of reference questions set out in the agenda (see Appendix A). The initial conversation focused on a reasonable pace for change in the current fuel supply mix. Participants noted that the pace of change is determined by many factors, including the desire of governments to mandate or invest in lower carbon options. For hydrogen, 10 or 20 years may be a realistic timeframe – but only if the lead-out value proposition can be put forward in such a way that consumers see its value, and that the true cost of current environmental externalities is shown. With governments aggressively leading policies to curtail emissions and support alternatives, we could see a real shift in the fuel mix within a few decades. However, absent significant changes in market conditions and forces, the wait could be very long. Technology, with unpredictable breakthroughs or obstacles, will always be a wildcard in terms of impact on the pace of change.

Shifting fuel markets are a reality with which producers and consumers must contend. Rapid growth in the supply of natural gas in the United States will impact fuel mixes, as well as Canada's target markets for energy exports. As these shifts occur, it may be prudent to focus on the best source of marginal returns on GHG reductions. Heavy-duty vehicles produce substantial

emissions, and their share of total overall emissions is likely to increase as trade continues to expand. One participant noted that transport rigs produce significantly more GHGs in comparison with personal vehicles. Therefore, targeting efforts for fuel switching to commercial freight vehicles may yield the best results. However, there are substantial economic and other barriers to switching. Infrastructure for alternatives is lacking, and rig owners are not inclined to invest in new technology when it will have little resale value. In an exemplar program of fleet fuel switching in Vancouver, even subsidies to switch fuels (and insurance to switch back if necessary) proved insufficient to encourage rig owners to adopt new fuels.

In the heavy vehicle sector, it was suggested that governments have not been sufficiently ambitious in their regulatory agenda. While personal vehicle fuel efficiency standards are rather aggressive, the commercial standards are viewed as less stringent. The opportunity to change this may come in 2018, when the United States puts out new regulations for heavy vehicles. It was noted, however, that Canadian stakeholders across all sectors should not wait that long, and that we should collaborate in order to become a regulatory leader.

Electricity may also be an area for potential focus. In areas such as B.C., which produces plentiful lower GHG-emitting electricity, operating commercial vehicles (like buses) on electric and hydrogen systems is a viable option. Infrastructure and vehicle costs are still substantially higher than traditional diesel, and will need to be further developed. However, not all regions have such low GHG energy sources for electrical power generation, and therefore electrification may not be the sole component of the solution.

Biofuels remain an important part of the complex fuels-GHG interface; some present an opportunity to lower carbon emissions. Fuel standards which include a bio-fuels component have resulted in some progress in moving towards emission reductions goals. While Canada has substantial capacity to produce the biomass feedstocks for biofuels, it is important to recognize the need for better information regarding true baseline emissions of fuel sources, as well as the impacts which biofuels may have upon combustion systems.

Throughout the discussion, participants underscored the need for governments to lead in the demonstration of commitment to the goal of reduced emissions, in order to foster the collaborations across sectors which will be necessary to achieve meaningful reductions. Governments must show long-term commitment to the objective of viable alternatives, and establish comprehensive strategies which include regulatory and investment regimes to support the objectives through collaborations with industry, researchers, and the public. Consumer education is also a vital component. Cross-sectoral leadership must be shown today, even though benefits won't likely be seen for decades.

Low-Carbon Fuel Strategies in Canada

Presentation

Bob Oliver, CEO of Pollution Probe, opened the second half of the meeting with an examination of strategies employed to support low-carbon objectives. He noted that transportation is a cornerstone of emissions reductions efforts. The sector is vital to the economy, but due to environmental and human-health impacts, action must be taken on emissions. Substantial work has occurred in government regulations. However, as the principal instrument through which governments act, regulation alone may not be actually be sufficient to accomplish the task. The complexity of the systems surrounding fuels and transportation emissions likely necessitate a broader suite of actions.

Regulation typically sets the standard for a sector, but usually does not try to put one component of a sector out of business. Thus, regulations must push companies to create better and cleaner vehicles and fuels, coupled with other measures (such as carbon pricing) in order to create a more effective, and holistic GHG reduction effort.

Canadian stakeholders need to determine who should share the risk of shifting to lower carbon alternatives, and policy should reflect the best available choice. A single regulation, such as the Low Carbon Fuel Standard in B.C., is a well-intentioned but insufficient effort on its own. Such regulations, if not paired with further efforts to support technology development, cleaner fuel infrastructure, and broader economic policies (such as a price on carbon), will be unlikely to achieve the emissions reductions it seeks. Broader, collaborative approaches to create a more comprehensive system of emissions lowering policies are needed.

Discussion

Participants agreed that regulation can help to set the agenda but that it must be complemented with other efforts. In regards to infrastructure, much further effort is needed to support alternatives such as LNG/CNG, hydrogen and plug-in electric vehicles.[1]

Canada's fragmented regulatory landscape likely does not provide the best means to support more effective standards. Though there was some suggestion that each province could try different regulations in an effort to individually hone the most innovative and creative formula, it was generally felt that compatible standards would be more effective. The challenge in this regard is political leadership. Federal and provincial leaders need to collaborate in order to achieve a semblance of coordination, and prospects for such efforts do not seem positive at this time. There is certainly a need for a province to step forward and lead in the cause to create more effective common regulation. Forums such as the annual Energy and Mines Ministers' Conference (EEMC)

[1] The Ottawa roundtable of this project (to be held on September 17) will focus specifically on infrastructure issues, and participants expressed a desire to continue to engage with the results of that process.

and the Canadian Council of Ministers of the Environment (CCME) could be used to advance this agenda.

Selection and proliferation of successful policies was noted to be a favoured approach among the participants. For example, given the demonstrated success of hydrogen buses, a call to focus efforts in the public transportation sector would be prudent. Renewable fuel standards have also proven effective in certain jurisdictions. The key to success is policies that support growth – economic, social or otherwise. It is easier, and perhaps more politically palatable, to foster growth than to force contraction. Instruments such as carbon pricing can be effectively used to support growth, if employed as part of a feedback loop that supports innovation investment.

Several participants noted that regulatory effectiveness is predicated upon compliance. At present, government enforcement mechanisms are lacking and require greater attention in certain areas. More information of higher quality is also needed. Better modelling, and an ability to accurately assess the impacts of regulations, will lead to the development of better policy in the future, particularly if we are able to further contextualize the complexities of the system.

Conclusion

Participants concluded the discussion by agreeing that a push towards greater innovation is needed, and that a collaborative approach is the best means to achieve this. The transition to lower-carbon fuels will require alignment on three critical platforms of change: technology, infrastructure and pricing. Advanced technologies require supporting infrastructure, and price induces consumer demand to drive market transformation.

The transition to a lower-carbon transportation sector will require the support of all sectors for collaborative approaches, through a broad spectrum of policies that can help to foster progress through partnerships between government, industry and other stakeholders. This includes support for technology and infrastructure development. More comprehensive policy mixes, including emissions regulations, fuels standards (e.g. Low Carbon Fuel Standards-light) and perhaps more stringent inspection and enforcement regimes, are also needed. Federal and provincial governments must collaborate with the private sector – both fuel producers and fuel consumers – to address these gaps.

In closing the session, it was noted that what may be the principal barrier to progress – and the source of fragmented and ineffective regulation – is a lack of common understanding of the complexity of the issues. Participants agreed that this session, and those which will follow, will help develop this understanding, and move towards a collaborative approach to possible solutions. Much is expected from the further work on this initiative, and the Forum is committed to engaging all participants in an ongoing dialogue.

Appendix A: Session Agenda

Reducing Transportation GHG Emissions in Canada
A Dialogue on a Lower Carbon Future

Vancouver Session
Fuel Switching & Alternatives: Opportunities and Challenges
June 11th, 08:00 – 12:30
Morris J Wosk Centre for Dialogue
Salon 20, ICBC Concourse, 580 West Hastings Street, Vancouver

8:00 a.m. **Session Begins**
Coffee and light refreshments available

8:10 a.m. **Welcoming Remarks**
David Mitchell, President & CEO, Canada's Public Policy Forum
- Overview of the meeting objectives and proceedings

8:20 a.m. **Contextual Introduction**
Jill Baker, Vice President, Canada's Public Policy Forum
- Project overview noting the complex relationships which affect Canada's transportation GHG emissions profile (fuels, vehicle technology, economy, and consumer behavior) and implications to cost-effective emissions reductions
- Highlight opportunities for, and challenges of, reducing transportation GHG emission related to fuel switching and alternatives (reference: *Background Brief*)

8:30 a.m. **Presentation: Fuel Switching and Alternatives**
Len Coad, Director of the Natural Resources Centre, Canada West Foundation

8:40 a.m. **Q&A and Moderated Discussion**
- At what pace can Canada realistically transform the transportation fuel supply mix? What would a sustainable (in all aspects) fuels mix look like in 2050?
- What are the key economic, security of supply, infrastructure, and consumer preference/behavior challenges that need to be addressed/overcome?
- What are the low-hanging fruit (10 year window) that can be pursued for switching to lower carbon fuels (e.g. specific fuels, fleets or sectors?)
- What are the most urgent policy and investment needs going forward?

10:15 a.m. **Health Break**

10:30 a.m. **Presentation: Low-Carbon Fuel Strategies in Canada**
Bob Oliver, Chief Executive Officer, Pollution Probe

10:40 a.m. **Q&A and Moderated Discussion**
- What is the role/relative importance of regulated fuel standards (e.g. LCFS) in the overall 'policy tool kit' for achieving a lower carbon transportation fuel supply?
- What are the most significant challenges for effective implementation of this policy approach? How can they be overcome?
- Are there more efficient/effective policy approaches to achieving a lower carbon fuel mix (e.g. price on carbon)?
- How can we avoid a fragmented province-by-province approach, in favour of a more comprehensive national approach to the development and implementation of fuel policy and regulation?

12:15 p.m. **Concluding Comments and Thanks**

12:30 p.m. **Meeting Adjourn**

With thanks to our sponsor:
Canadian Fuels ASSOCIATION | ASSOCIATION canadienne des carburants

Appendix B: List of Participants

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