

## 2019 CTRF Annual Conference

May 26 - 29

Vancouver, British Columbia



The 54th Annual CTRF Conference was held at the Pinnacle Harbourfront Hotel in Vancouver. Located in the Coal Harbour neighbourhood downtown, the Pinnacle provided easy access to restaurants, Stanley Park and the Seawall, Gastown and other local attractions. It also offered an excellent venue for paper sessions, meetings and social events.

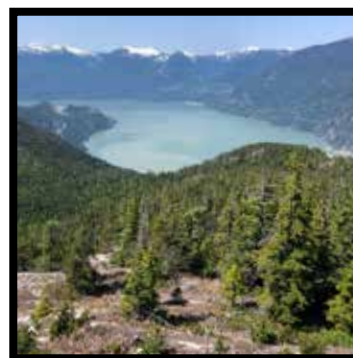
The theme of the conference was **“Innovation, disruption and change in Canadian Transportation: What is the New Normal?”**. A record number of 85 papers were presented in 24 **technical sessions**. Papers covered all major as well as emerging modes of transportation including cycling, electric and autonomous vehicles, and addressed a wide range of

technical, organizational, regulatory, institutional and policy aspects of their particular topics. There were 3 **plenary sessions** on “Innovation and Technology - Opportunity and Challenge”, “Moving Canada's Energy Resources to Global Markets” and “The Asia-Pacific Gateway and Corridor – Challenges and Future Directions”. On all three conference days a featured **keynote luncheon talk** complemented the plenary theme. Craig Hutton, Director General, Strategic Policy and Innovation, Transport Canada, followed the “Innovation and Technology” plenary, Ted Gruetzner, Vice President Energy, Environment and Resources, Global Public Affairs, followed the “Moving Canada's Energy Resources to Global Markets” plenary and Shaun Stevenson, President and Chief Executive Officer, Port of Prince Rupert spoke after “The Asia-Pacific Gateway and Corridor” plenary.

On Tuesday **technical tours** were organized at the Canada Post Pacific Processing Centre, TransLink's Maintenance and Control Centre, and the Alliance Grain Terminal Ltd. All tours were great successes. A fourth tour of the Deltaport Container Terminal was cancelled due to labor negotiations at the port but we were fortunate to have a representative from Global Container Terminals come to our venue and provide an excellent presentation on port terminal operations and productivity initiatives followed by in depth Q&A.



Vancouver Harbour – Dinner Cruise



Squamish - Companions Program

The thesis of the **Bison Transport Debate** was “This House Resolves That More Oil Pipelines Should be Built in Canada”. The challengers, Chris Bachmann and Joel Carlson, argued in favour of the thesis while the defending champions, Trevor Hanson and Adrian Lightstone, argued for the antithesis. Barry Prentice, Father and Founder of the Debate, served as moderator. The challengers won the debate and took possession of the trophy for the following year.

Summaries of selected plenaries and luncheon speeches can be found elsewhere in the FORUMation.

The conference dinner was held aboard the MV Harbour Princess. Delegates were treated to fine food and drink; good weather; views of Burrard Inlet, the North Shore, shipping terminals and lounging seals. An informative commentary was provided by Doug Mills from Port Metro Vancouver.

The **Companions Program** was organized by Laura Beaulieu-Lindsey and Peggy Chow. Over three days participants experienced a bus ride to Squamish and ride up the Sea to Sky Gondola, a guided tour and lunch at Hycroft Mansion, a private walking tour of the Vancouver waterfront and Gastown, and a visit to the Lonsdale Quay Market on the North Shore for sightseeing and shopping.



**Hycroft Mansion**

This year's conference had 192 participants attending the whole program, one or more days, or a lunch event. One of CTRF's goals is to bring together academia, industry and government, which represented 49, 36 and 15 percent of the participants respectively. Another CTRF goal is to encourage students to pursue research and careers in the transportation field. Forty students attended the conference with a number of students being coauthors and/or presenters of papers. Many of the academic participants were Assistant Professors, research fellows and post grads. These students and young academics are the future of our profession and we hope to see their work and achievements at future conferences. The conference was also attended by the usual contingent of U.S. based researchers as well as attendees from Australia, Cambodia, China, Germany, Korea, Nigeria and Taiwan.

We gratefully acknowledge and recognize the contributions of all sponsors, student volunteers, delegates, authors, presenters, session chairs, suppliers and The Sauder School of Business to the success of the Conference. Thank you to all involved for your attendance and participation.

Next year's conference will be held May 24 – 27 at the DoubleTree by Hilton in Montreal. We encourage everyone to attend as CTRF continues its mission to promote and disseminate research, foster professional networking, and encouraging student interest in transportation research.

Garland Chow, VP Program  
Robin Lindsey, VP Meetings



**Mary, Phyllis, Peggy, Judy, Sheila,  
Alison, Kathryn, Marina, Joanne,  
Carmen, Lily, Laura**

# La conférence 2019 du GRTC

## Du 26 au 29 mai 2019

### Vancouver, Colombie-Britannique

La 54<sup>e</sup> conférence annuelle du GRTC s'est tenue à l'hôtel Pinnacle Harbourfront à Vancouver. Situé dans le quartier Coal Harbour du centre-ville de Vancouver, le Pinnacle nous a permis d'être à proximité de plusieurs restaurants, du parc Stanley, du Seawall, du quartier Gastown et d'autres attractions locales. Ce fut également un endroit excellent pour les présentations d'articles, les réunions et les activités sociales.

Le thème de la conférence était «Innovation, perturbation et changement dans les transports au Canada: sur la voie de la nouvelle normalité? » Un nombre record de 85 présentations d'articles a animé les 24 sessions techniques. Les communications couvraient tous les modes de transport majeurs, ainsi que les modes de transport émergents, notamment le vélo, ainsi que les véhicules électriques et autonomes, et abordaient un large éventail d'aspects techniques, organisationnels, réglementaires, institutionnels et de politiques publiques liés à leurs sujets particuliers. Trois conférences plénières ont été consacrées aux thèmes «Innovation et technologie - Opportunités et défis», «Déplacer les ressources énergétiques du Canada vers les marchés mondiaux» et «La Porte d'entrée et le Corridor de l'Asie-Pacifique - Défis et orientations pour l'avenir». Pour chacun des trois jours de la conférence, un dîner-causerie a permis de compléter le thème de la conférence plénière de l'avant-midi. Nous avons ainsi eu le plaisir d'entendre Craig Hutton, directeur général des Politiques stratégiques chez Transports Canada, suite à la conférence plénière «Innovation et technologie», Ted Gruetzner, vice-président Énergie environnement et ressources chez Global Public Affairs, suite à la conférence plénière «Déplacer les ressources énergétiques du Canada vers les marchés mondiaux» et Shaun Stevenson, président et chef de la direction du port de Prince Rupert, suite à la conférence plénière «la Porte d'entrée et le Corridor de l'Asie-Pacifique».



Technical Tour – Alliance Grain Terminal

Les visites techniques du mardi ont permis à plusieurs d'explorer le centre de traitement du Pacifique de Postes Canada, le centre de maintenance et de contrôle de TransLink et l'Alliance Grain Terminal Ltd. Toutes ces visites ont été de grands succès. Une quatrième visite du terminal à conteneurs de Deltaport a dû être annulée en raison des négociations en cours sur les relations de travail. Nous avons néanmoins eu la chance d'accueillir un représentant de Global Container Terminals qui a pu nous offrir une excellente présentation sur les opérations du terminal portuaire et sur les initiatives pour accroître la productivité, laquelle a été suivie d'une bonne période d'échanges avec le public.



La proposition du débat sur le transport commandité par Bison Transport était la suivante: «Cette assemblée se prononce pour que plus d'oléoducs soient construits au Canada». Les challengers, Chris Bachmann et Joel Carlson, ont plaidé en faveur de la proposition, tandis que les champions en titre, Trevor Hanson et Adrian Lightstone, ont plaidé contre la proposition. Barry Prentice, parrain et créateur du débat, a servi de modérateur. Les challengers ont gagné le débat et pris possession du trophée pour cette année.



Des résumés de conférences plénières et de dîners-causeries choisis sont présentés dans le FORUMation.

Le **souper de remise de prix** a eu lieu à bord du MV Harbour Princess. Les participants ont eu la chance de pouvoir apprécier le délicieux repas; le beau temps; la vue sur Burrard Inlet, le North Shore, les terminaux du port et les phoques qui se prélassaient. Nous avons également pu profiter des commentaires forts intéressants de Doug Mills de Port Metro Vancouver.

Le **programme pour les conjoints** était organisé par Laura Beaulieu-Lindsey et Peggy Chow. Au cours des trois jours, les participants ont pu parcourir le trajet pour Squamish en bus et remonter la télécabine Sea to Sky, ont prit part une visite guidée suivie d'un dîner à l'hôtel Hycroft Mansion, ont eu droit à une visite piétonne privée du front de mer de Vancouver et du quartier Gastown, ainsi qu'à une visite au Lonsdale Quay Market, dans le North Shore pour y faire du tourisme et des emplettes.

Cette année, la conférence a réuni 192 participants pour tout le programme, un ou plusieurs jours ou un dîner-causerie. L'un des objectifs du GRTC est de rapprocher les acteurs provenant du monde universitaire, des entreprises et des gouvernements, qui ont représenté respectivement 49, 36 et 15 % des participants. Un autre des objectifs du GRTC est d'encourager les étudiants à poursuivre des recherches et à faire carrière dans le domaine des transports. Quarante étudiants ont assisté à la conférence, plusieurs d'entre eux étant coauteurs ou présentateurs d'articles. Un grand nombre des participants provenant du milieu académique étaient des professeurs adjoints, des chercheurs associés et des chercheurs post doctoral. Ces étudiants et jeunes universitaires sont l'avenir de notre profession et nous espérons voir les résultats de leurs travaux et leurs réalisations lors de conférences futures. En plus du contingent habituel de chercheurs provenant des États-Unis, des chercheurs provenant d'Australie, du Cambodge, de Chine, d'Allemagne, de Corée, du Nigéria et de Taiwan ont également assisté à la conférence.

Nous remercions avec gratitude et tenons à souligner les contributions de tous les commanditaires, les étudiants bénévoles, les participants, les auteurs, les présentateurs, les présidents de conférences, les fournisseurs et de la Sauder School of Business au succès de la conférence de cette année. Merci à toutes les personnes impliquées pour votre présence et votre participation.

La prochaine conférence aura lieu du 24 au 27 mai 2020 au DoubleTree by Hilton à Montréal. Nous vous encourageons tous à y prendre part alors que le GRTC y poursuivra sa mission qui consiste à promouvoir et à diffuser la recherche, à favoriser le réseautage professionnel et à susciter l'intérêt des étudiants pour la recherche en transport.

Garland Chow, VP Program  
Robin Lindsey, VP Meetings

### ***Vancouver Harbour Dinner Cruise***



*Mark Hemmes presenting Malcolm Cairns with a thank you gift for being our President for the last two years. Malcolm is the CTRF's only 2-term president. Thank you Malcolm!*

## — President's Message —



This year's successful conference in Vancouver set a record in the number of papers submitted (86) and was another conference that will be remembered for both the content of the presentations and the three excellent plenary sessions. The first plenary was on Innovation and Technology, the second on Moving Canada's Energy Resources to Market and the third, one most appropriate for Vancouver, discussed the Asia Pacific Gateway and Corridor. The subject matter was skilfully discussed by panel members whose expertise and breadth of knowledge captivated all those in attendance. We were also fortunate to enjoy spectacular weather during the technical tours to the Canada Post Processing Centre, TransLink's Maintenance and Control Centre, and Alliance Grain Terminal. A tour to DeltaPort was cancelled as a consequence of ongoing labour negotiations, however

DeltaPort Management instead sent senior management staff to the conference and gave an in-depth presentation on DeltaPort operations and the everyday challenges they face. The superb weather followed us on a wonderful tour and dinner cruise through Vancouver's Burrard Inlet.

This year CTRF joined with the Pacific Chapter of The Chartered Institute of Logistics & Transport (CILTNA) for the Wednesday luncheon and a follow-on Workshop on Canadian Gateway Cities: A workshop on Transportation Infrastructure, Global Value Chains and Urban Governance. This also proved to be very informative.

Commendations must go to the organizing committee and especially Robin Lindsey and Garland Chow for the immense effort that was expended in leading the committee of the 2019 conference in Vancouver. On behalf of the members of CTRF, we thank you.

CTRF's annual general meeting is also held concurrent with the annual conference. Every year sees a change in our board composition with this one marking the end of Malcolm Cairn's second term as President. I wish to thank Malcolm for his steady hand and leadership of the organization over the past two years and look forward to continuing to work with him in his capacity as the immediate past president. I would also like to recognize the contribution of our departing board members; Philip Davies, Mario Iacobacci, Dan Lynch, and Claude Sirois. As new members, we are welcoming Jean-Marc Lefebvre, Don McKnight, and Steve Pratte. In addition, thanks to long time board member Jim Frost who has taken up the position of Executive Vice President and is therefore on track to be the next President following my tenure. It is important to note that CTRF is a volunteer organization and that the contributions of board members and conference organizers are important as they bring their ideas and fresh perspectives to constantly improve the programs that CTRF delivers. I look forward to working with all of them.

The planning for the 2020 conference in Montreal has been underway for some time now. The conference, with the theme of how we can best manage and build for the future at a time of unprecedented uncertainty and change, will be held from May 24 – 27, 2020 at the DoubleTree by Hilton. Montreal is one of Canada's most exciting cities and we look forward to another successful conference.

CTRF's objective is "to promote the development of research in transportation and related fields and provide a forum for networking and discussion", one to which the organization and the Board strives to hold itself to. In these times of industry change, including the legislative and regulatory environment, it is important that CTRF look forward and encourage all participants to continue the rigorous, objective, and evidence-based transportation research that it has over its history.

I welcome your thoughts and suggestions on how CTRF could be of most value to you. I can be reached by email at [mhemmes@quorumcorp.net](mailto:mhemmes@quorumcorp.net).

Mark Hemmes  
President

## — MOT du Président —

La conférence couronnée de succès qui a eu lieu cette année à Vancouver a établi un nouveau record en ce qui concerne le nombre de communications soumises (86). Il s'agit d'une autre conférence dont on se souviendra aussi bien pour le contenu des présentations que pour les trois excellentes séances plénières. La première séance plénière portait sur l'innovation et la technologie, la deuxième sur l'accès des ressources énergétiques du Canada aux marchés et la troisième, très à propos pour Vancouver, traitait de l'Initiative de la porte et du corridor de l'Asie-Pacifique. Les sujets ont été abordés de main de maître par les membres des groupes d'experts, qui ont su captiver leur audience par leurs expertises et l'étendue de leurs connaissances. Nous avons également eu la chance de bénéficier de conditions météorologiques exceptionnelles au cours des visites techniques au Centre de traitement de Postes Canada, au Centre de maintenance et de contrôle de TransLink et au Terminal des grains Alliance. La visite à DeltaPort a dû être annulée en raison des négociations en cours sur les relations de travail. Cependant, des cadres supérieurs de DeltaPort Management ont participé à la conférence et ont présenté de manière approfondie les opérations de DeltaPort et les défis quotidiens auxquels ils sont confrontés. Les conditions météorologiques exceptionnelles se sont également poursuivies au cours d'une magnifique tournée et d'un dîner-croisière dans le Burrard Inlet, à Vancouver.

Cette année, le CTRF s'est associé à la section du Pacifique de l'Institut agréé de la logistique et des transports (CILTNA) pour le lunch du mercredi et l'atelier qui en a découlé sur les villes portes d'entrée du Canada: un atelier sur les infrastructures de transport, les chaînes de valeur mondiales et la gouvernance urbaine. Une activité qui s'est avérée fort instructive.

Des félicitations doivent être adressées au comité organisateur, en particulier à Robin Lindsey et à Garland Chow, pour les efforts considérables déployés pour diriger le comité organisateur de la conférence de 2019 à Vancouver. Au nom de tous les membres du GRTC, nous vous remercions.

L'assemblée générale annuelle du GRTC a lieu en même temps que la conférence annuelle. Chaque année, la composition de notre conseil d'administration change, cette année marque le terme du deuxième mandat de Malcolm Cairn en tant que président. Je souhaite remercier Malcolm pour son leadership de l'organisation, qu'il a mené d'une main sûre, au cours des deux dernières années, et j'aurai plaisir à poursuivre le travail avec lui en sa qualité de président sortant. J'aimerais également reconnaître la contribution de nos membres sortants du conseil d'administration; Philip Davies, Mario Iacobacci, Dan Lynch et Claude Sirois. En tant que nouveaux membres, nous accueillons Jean-Marc Lefebvre, Don McKnight et Steve Pratte. En outre, merci à Jim Frost, membre de longue date du conseil d'administration, qui occupe le poste de vice-président exécutif et est donc en voie de devenir le prochain président à la suite de mon mandat. Il est important de souligner que le GRTC est un organisme composé de bénévoles et que les contributions des membres du conseil d'administration et des organisateurs de la conférence sont importantes, car ils apportent leurs idées et de nouvelles perspectives pour améliorer constamment les activités proposées par le GRTC. J'ai hâte de travailler avec chacun d'entre eux.

La planification de la conférence 2020 à Montréal est amorcée depuis quelque temps déjà. La conférence, qui aura pour thème les meilleures façons de gérer et de construire pour le futur, à une époque d'incertitude et de changement sans précédent, se tiendra du 24 au 27 mai 2020 au DoubleTree par Hilton. Montréal est l'une des villes les plus excitantes du Canada et nous nous attendons avec enthousiasme à une autre conférence réussie.

L'objectif du GRTC est de «promouvoir le développement de la recherche sur les transports et les domaines connexes et de fournir un forum de réseautage et de discussion», un objectif auquel l'organisation et le conseil s'efforcent de se tenir. En ces temps de mutation de l'industrie, notamment de l'environnement législatif et réglementaire, il est important que le CTRF envisage l'avenir et encourage tous les participants à poursuivre ses recherches sur le transport, qui sont rigoureuses, objectives et fondées sur des preuves.

Vos suggestions et vos suggestions sur la manière dont le CTRF pourrait vous être très utile sont les bienvenues. On peut me joindre par courriel à [mhemmes@quorumcorp.net](mailto:mhemmes@quorumcorp.net).

Mark Hemmes  
Président

**Plenary Session**  
***Innovation and Technology – Opportunity and Challenge***  
***May 27, 2019***

***Report by Trevor Hanson***



The session began with a welcome from Garland Chow who spoke about how the session would unfold: speaking about innovation, the disruptions, and the challenges. The challenges regarding infrastructure, safety, privacy, security barriers, need to be overcome for innovation to occur. Speakers spoke for 10 – 15 minutes, followed by a broader group discussion.

**Eve Hou – Future of Mobility in Metro Vancouver.**

Senior leadership can see there is a need to position organization to respond to changing technology. Eve began with a discussion on disruptive innovation and transportation of the past, the most notable being the automobile. What lessons from the past can teach us?

Key reasons for disruption were that the price was comparable to other modes, while being safer or more convenient. Looked at innovation changes, such as electricity, radio, world wide web, quicker adoption of technology than ever before.

Eve discussed four disruptions in transportation:

1. Electrification (within 2 quarters, 5% to 15% of new vehicle sales in BC)
2. Connectivity (more personalized travel, internet of things, etc.)
3. Sharing (business model disruption, the sharing economy)
4. Automation (least developed, most potential – safety, convenience and public policy, similar to what made the automobile successful initially)

Mobility as a Service (MaaS) – binds them all under the concept that people do not purchase vehicles, they purchase trips. Eve spoke about what TransLink is doing, including New Mobility Research Grant – translinktomorrow.

**John Niles, Western Regional Director, Harmonize Mobility**

**Driverless cars: barriers, enablers, uncertainties**

John offered a very specific prediction for when all Canadians will have access to Autonomous Vehicles (AVs): July 2042.

There are two markets of automated vehicles: Market 1 – personal automation, Market 2 – public automation. John described a number of vehicles that are already automated to some degree, like the Tesla and Audi, but automated features are trickling down to lower models.

Big car companies are looking to sell both AV cars and AV rides, though it is not clear whether the sales of cars or rides will predominate. In addition, the transition problem, how to transition between automated and non-automated vehicles, has yet to be solved.

Barriers – the technology is evolving, challenge: sensors and computers need to work together, and quickly. Challenges with threat assessment while driving – intervene or do not intervene. There is an enabling technology debate as well: LIDAR or cameras? Future of vehicle automation depends on what it means. Fewer vehicles? Less congestion? More vehicles? More drivers?

There are also questions about public policy behavior vs. consumer behavior. Will AVs reduce congestion? There are arguments on both sides. Public perception of AV benefits? Will distracted driving become safe? Forecasts keep changing.

There will also be new types of accidents.

What will be the social impacts of Market 2 on Transit? What happens if robocabs happen, and what if it is cheaper than transit? There will be a conflict between commercial fleet services and public transit, will there be collaboration? Public transit agencies beginning to influence Market 2 supply and demand on a case-by-case basis.

Forecasting AV progress is a challenge – technology improvement not smooth, automation anxiety. Cannot forget about walking, biking, and flying cars (via drones) is realistic. Prediction: 2040 – uncertain mix of vehicle sizes in two markets.



#### **Kurt Ritcey:**

Kurt spoke on the future of mobility in goods and began with an example:

Monique needs a new camera lens for a photoshoot and shopping online – what is happening behind the scenes to make this happen? Kurt describes a scenario where a plethora of enabling technology to ensure Monique gets her new lens. Everything from how the product is delivered, how it is moved, how it is distributed. Same day delivery has become more commonplace. Digital supply network allows for connectivity – supply chains are no longer linear.

All the new trends that we see every day include an increase in adoption rates for such things as “Smart lockers”. Smart lockers can be mobile, secure and help address a larger issue: removing the need for the deliverer of the good and receiver of the good to be in the same place at the same time. In terms of innovation, “Fail fast and improve” is becoming a mantra. Changing ownership through the supply chain can make things more efficient. Presently, we are at near real-time tracking of goods. Drone deliveries currently being trialed.

#### **Geoffrey Wood – Canadian Trucking Alliance**

Spoke about his graduate work and background in trucking research. How does the trucking industry look at future technology and innovation? All provincial trucking associations fall under the umbrella of the CTA. Member companies employ 150,000, governed by 75-member board. CTA is in the business of working with government and helping to inform policy.



Priorities:

1. Driver shortages
2. Electronic logging devices
3. Level-playing field in enforcement
4. Driver income
5. Elimination of emissions tampering
6. Truck safety

How CTA approaches innovation – we do not get involved with “business to business” relationships, rather on regulatory side.

When introducing technology and innovation some key questions:

1. Does regulation need to change?
2. Does the technology make sense (tested)
3. Should be mandated or optional?
4. Establishing and mandating partnerships

Geoffrey discussed a 10-point safety action plan following the bus-truck collision tragedy in Humboldt, SK, including mandated use of Electronic Logging Devices, as well as forward facing cameras and technology that can detect driver distractions. Need to be realistic about “driverless trucks” as drivers often do much more than just drive.

***Question and answer period***

**Q: Why is 5G important for the future of mobility?**

KG – current 4G is too constrained to allow us to the IoT.

JN – the industry talks about what 5G will do, but what about V2V communication, - should we give up on DSRC and focus on 5G?

EH – Some car manufacturers already embedding technology to permit V2V

GW – if members ask for a response, they will address it.

**Q: What do you expect the externalities of 5G to be?**

KR – Externalities are a challenge in every technology – need to understand as a society what we are willing to accept as an externality. People looking for 100% safety, when 100% not possible.

**Q: Public transit has had many of these automation technologies already. However, public transit usage of this has not led to this being adopted by other sectors. What is this and do you expect this new technology to be the same?**

EH – this new approach is more individualized.

JN - Perhaps there is a labour argument

KR – labour numbers enshrined in operations

**Q: What about platooning with driverless trucks with one truck with a driver?**

GW – Not much demand for it yet, market will decide.

JN – Will depend on use case, when it would make sense to use, what types of runs.

**Q: Externalities, costs, and congestion pricing**

JN – people hate tolls, considering reverse tolling. What is the number that will get people off the highway?

## Bison Transport Debate 2019

### Report by: Mark Hemmes



Always a popular event at CTRF's annual conferences, the Bison Transport Debate was held on Monday, May 27. The topic this year was **"This house resolves that more oil pipelines should be built in Canada"**. As last year's winners, the incumbents were Trevor Hanson and Adrian Lightstone, who were challenged by Chris Bachmann and Joel Carlson. The Sunday evening coin toss favoured Chris and Joel who chose to defend the resolution.

Joel Carlson began his support of the resolution by stating that the debate was not about the global impacts or global production of oil. It was simply about adding capacity for the movement of 2-3 million barrels of oil per day (BPD). That can be compared to an annual global production and demand of

100 million BPD. Therefore, what Canada does or does not do is not going to change overall production, regardless of where it is produced or from where it is shipped. He further stated that it is not about any one pipeline but about adding pipeline capacity overall. And it is not about building pipelines as they have been built in the past – it's about building the best, safest and most efficient pipelines possible.



Why he asked? First to maximize the economic benefits of oil production for all Canadians; second to ensure the most efficient method of carrying oil to market is employed and third to ensure economic relations are maintained given the situation as it exists today in the interest of the Canadian economy. Joel pointed out that the energy sector employs over 500,000 Canadians and that the impact on lost carrying capacity is significant, citing that oil prices which were discounted because of the 2008 transportation constraints, meant Western Canadian oil was discounted by 60-70% from world oil prices. This meant \$20 billion in lost revenues. Trans Mountain has

a value of \$40 B for oil producers – constrained capacity means less revenue for all.

He closed by stating that pipelines are more efficient than rail. While rail is relatively safe, it has four times as many incidents, is less environmentally effective than pipelines, and is 3-4 times more expensive. As a trading nation, Canada depends on its ability to get oil to market efficiently. The US is now the major market, but when tariffs are applied on commodities, it is untenable for Canada to rely on a single market for such a large commodity.

Adrian Lightstone opened his rebuttal stating that pipelines are not environmentally friendly, and the risks are too great. He raised three supporting points; 1) Climate change is an issue that pipelines are not going to solve. As an example, he suggested that people should go into the garage, close all the doors and start their car. And let him know how they feel after an hour. He added that we have a responsibility to future generations; 2) the environmental impacts of pipelines are significant given that half of the oilsands projects are developed using open pit mining, and; 3) Water for the steam necessary in the production process comes from the Athabasca River and the outflow goes to tailings ponds which are toxic. This also raises concerns about the destruction of the boreal forest. Further, processing oil sands bitumen means mixing the product with diluent. The risk of tanker spills is increased in west coast waters and we have no experience in cleaning up oil spills with diluent mixed with bitumen.

Adrian closed stating the need for Canada to move beyond oil resources to sustain its economy. Canada needs to expand into new markets, diversify, and readapt the economy. This means no more pipelines, and Canada needs to focus on diversification.

Chris Bachmann's response was to advise Adrian that he went to the wrong conference. This was the CTRF, not the Canadian Environment Research Forum – not the Canadian Public Policy Forum. We are experts in transportation and that building pipelines will have no impact on global production and supply. If Canada doesn't supply oil it will come from another country.

He emphasized the point that the risk is about building safer, better pipelines. Statistically, improvements in technology have decreased fatal accidents / million miles from 250 to 20 – a 92% improvement. We can do the same with pipelines. He further stated that there is a need to focus on innovation and growing the economy. Building pipelines that are safer is a proactive response to economic growth, making sure that the product moves in the most efficient and effective mode.

Trevor's response was to point out that building more pipelines will only create more demand – with all the implications that follow. He pointed out that more pipelines will incent oil companies to sell more oil and that if they build more pipelines oil reserves will be used up faster than if we don't.

The follow up comments from the audience were evenly split, and in the end, the challengers were voted to be the winners and the resolution stood.

Congratulations go to both teams for debating a very contentious and current topic. We look forward to Chris Bachmann and Joel Carlson defending their title at next year's debate in Montreal.



***Ted Gruetzner, Vice President Energy, Environment and Resources, Global Public Affairs  
Electric Vehicles – A Canadian Opportunity***

***Luncheon Speaker: Tuesday, May 28, 2019  
Report by: Gord Baldwin***

Mr. Gruetzner stated that the Tenth Clean Energy Ministerial (CEM10) was taking place across the street. This meeting had a similar agenda to the CTRF annual meeting. He hopes that the CTRF members do work on the policy side that could help meet the issues discussed at both the CTRF and the CEM meeting.

His own career, 30 years in the electricity sector, had led him to believe in evolutionary change rather than revolutionary change.

The move to electric vehicles is a Canadian opportunity but we are at a fork in the road when it comes to energy, Canadians appear to be struggling with key issues. What is the best way to combat climate change without risk to the economy? Has Canada lost the ability to build infrastructure and will global capital pass us by? How can we heat our homes, fuel our cars and help the environment? How can Canada protect existing jobs? How can one afford to put gas in the car, heat our homes, pay the electricity bill, and still protect the environment? The fork in the road is a choice between going back to where we came from or moving towards a different future.

How can Canada maintain its position as a traditional energy power, ensure that key resource projects proceed, respect the rights of people and communities and respect the environment? It is not an easy task.

He feels that we need to think more boldly and act cooperatively.

With respect to electric cars, we see Ford and Volvo getting out of internal combustion engines for their sedans. A Bloomberg report states that by 2040 close to 60% of vehicles worldwide will be electric, reducing the need for 13.7 billion barrels of oil a day. Alberta produces around 3.6 billion barrels a day.

There is an increasing demand for clean electricity and charging stations for vehicles. Are we ready for these changes, ready to manage this transformation? Maybe.

In British Columbia, with abundant hydro electricity, there is an ambitious electrification program to electrify pipelines, homes, cars. In Ontario, plans are vague. Quebec also has announced a bold electrification program.

Canada has the advantage of the cleanest, most reliable electric system in the world. It has an ideal platform for charging electric vehicles. The cleanliness of the electricity system is measured in grams of green house gases per kilowatt-hour. The best is in BC where it is close to zero, good in Ontario since the move off coal generation with 11 grams of GHG/kilowatt hour. Even Alberta's coal generated electricity at 82 grams is much cleaner than that used in Germany at 500 (as Germany uses lignite coal to produce their electricity). This gives Canada a large advantage.

There have been missteps. In Ontario, where the heavy lifting to get off coal generation of electricity has already taken place, the provincial government's attempt to encourage electric car adoption through subsidies was seen as a subsidy to the elites.

It was suggested that the CTRF could do research into why would people buy an electric car, how to get people to adopt them?

Canada has most of the materials and could produce solar panels but we don't. Canada has the minerals required to produce the electric car batteries but it is not doing so. There seems to be a feeling that the obstacles, the effort required to getting approvals to open mines in Canada are too great, it is easier to invest and open mines in other countries, even for Canadian firms.

Canada has very talented high tech in areas such as Artificial Intelligence, we are very good at making cars, we are very good at making car parts but not active in making electric cars in Canada. Having people driving electric cars is a good public policy goal for clean air. Having an integrated upstream, downstream, middlestream approach would result in better environmental performance and better economic benefits across many sectors.

There are key policy issues as there will be both winners and losers from this transformation:

- Have we done what is necessary for automobile supply chains to switch from internal combustion engines to electric vehicles/
- Can we be involved in making batteries for electric cars or is it already too late?
- How do we retrain workers displaced by the changes?
- What will we do with spent batteries in the future?

We should be doing research in all of the above areas.

People are taking sides based on who they are or who they think they are. The political left appears to like electric cars but not the mines and construction required to make them. The political right appears to see wind and solar power as only toys of the rich.

Some final thoughts on energy diversity; A firm in Prince Rupert, including great work with indigenous groups, exporting liquid propane gas to Japan, has been a success story for Canada. Oil and gas will still play an important role in supplying energy needs, chemicals and fertilizers. A market beyond the United States is needed. Indigenous partnerships in energy projects should be the norm, not the exception or you will be left behind. Ways need to be found to continue mining and forestry while reducing the carbon footprint. We need to use hydro electricity properly, electrifying the mining, oil and gas industries, using our clean platform.

We are facing a tough journey.

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[“Hosted by Canada during the week of 27 May 2019, alongside the 4th annual Mission Innovation (MI4). The CEM consists of 24 countries and the EU, who together account for 90% of all investment in clean energy in the world and 75% of global GHG emissions”] <https://sdg.iisd.org/events/tenth-clean-energy-ministerial-cem10/>



*Plenary Session  
Moving Canada's Energy Resources to Global Markets*

*Report by Robin Lindsey*

*Moderator: Malcolm Cairns*

*John Zahary, President & CEO, Altex Energy*

Mr. Zahary spoke about Altex Energy: a Canadian company that moves crude oil products in Canada and the US. Most heavy oil is currently transported by pipelines using diluent (i.e., condensate) to allow oil to flow. Canada imports 300-400 thousand barrels per day (bbl/d) of diluent from Chile and the US. Doing so is expensive. Altex has made its mission to move heavy oil with less, or even no, diluent using railcars instead of pipelines. Using rail to transport oil dates back to the beginning of the industry's history when John D. Rockefeller moved oil by train from Titus, Pennsylvania, to a wider market.

The lack of pipeline capacity has led to a serious oversupply of oil in Canada, and a large differential between the price in Alberta and the tidewater price. Canada still exports 2 million bbl/d to the US. It needs more transportation capacity to maintain and boost this flow. Rail transport helps, and volume peaked at 400 thousand bbl/d although it is now running at approximately 200 thousand bbl/d. Pipeline proponents have criticized rail transport on safety grounds. It is true that diluent is flammable, but bitumen itself is not. Hence Altex's goal to dispense with diluent. The company is a leader in railcar technology, and has received several Canadian and US patents.

*Corey Caville, Market manager, CN*

Mr. Caville replaced Buck Rogers who had been scheduled to present at the plenary but was unable to attend. Mr. Caville described CN's rail network in North America and various initiatives the company has adopted to improve service. CN has more than 19,500 miles of rail track. Traffic is busiest between Edmonton and Winnipeg, and it is also heavy at Vancouver, Prince Rupert and Chicago. Operating and services metrics are improving. CN has been adding 600 miles of track per year and expanding double track to allow trains to pass without stopping. Traction is being enhanced by using locomotives with greater horsepower. In winter, trains have to be shortened because air cannot be pumped to activate brakes on the cars as efficiently. CN has been introducing "repeater cars" to ease this problem and enable longer trains. It has also implemented a Track Evaluation System to check the condition of track more effectively.

Future trends in transport of oil by rail are uncertain. Crude shipments increased significantly in 2018, and exports of propane from Prince Rupert began in April, 2019. However, rail movements of crude dropped in early 2019 following production curtailments mandated by the Alberta Government. It is unclear what will happen if pipeline capability is increased. Some customers expect rail shipments to continue for years to come. Rail transport has some momentum because of the sunk costs incurred in setting up the system. In addition, rail transport can be made safer by adding a polymer to bitumen so that it will solidify and float in water.

*Marla Orenstein, Director- Natural Resources Centre, Canada West Foundation*

Ms. Orenstein described the Clean Fuel Standard (CFS) that the Government of Canada has introduced to reduce national greenhouse gas emissions. The CFS has six key features:

1. It applies to producers, importers and distributors of fossil fuels, and does not differentiate between domestic and imported fuels.
2. It is likely to set as a target a 10% reduction in carbon intensity from well to wheel.
3. It is technology-neutral. Biofuels, electrification and increased efficiency are all acceptable ways to reduce carbon intensity.
4. The legislation will start in 2022 with liquid fuels. Gas and solid fuels will be brought in a year later.
5. Some fuels will be excluded: fuels exported or in transit, and fuels used for non-combustion.
6. A cap and trade system will be adopted in which credits can be banked.

British Columbia, California and Europe have all adopted carbon intensity reduction legislation. Performance has been mixed. For example, while California exceeded its target, total emissions actually increased. This happens when reductions in intensity cause fuel costs to drop, which encourages greater consumption. This “energy rebound” effect was described in 1865 by the British economist Stanley Jevons in connection with the use of coal, and is known as the “Jevons Paradox”. According to the Canadian Energy Research Institute (CERI), a 20% reduction in carbon intensity will be necessary in order for total emissions in Canada to decrease. CERI projects a continuing increase in emissions from aviation, freight and rail transport, as well as an increase in passenger vehicle kilometres travelled. The Clean Fuel Standard will not undermine arguments for a carbon tax, which is complementary to the CFS and differs in a number of important respects.

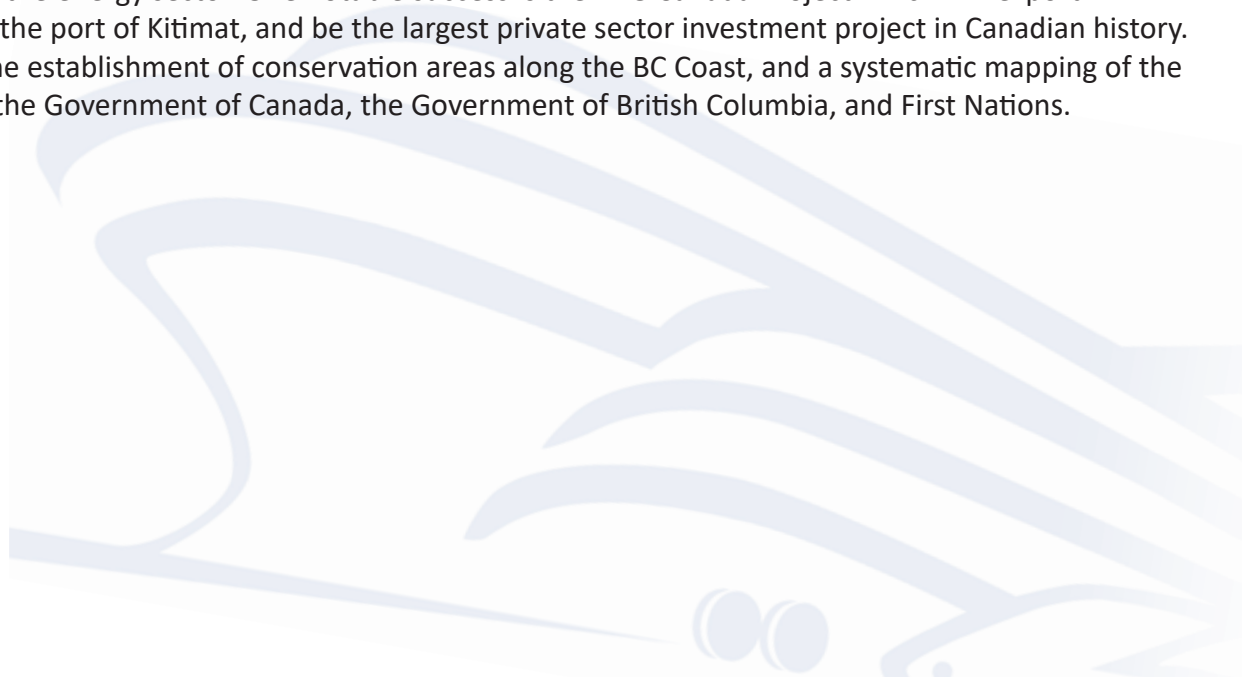
Ms. Orenstein also talked briefly about the Bill C-69 Act which will overhaul the process of impact assessment in Canada. As past President of the International Association for Impact Assessment, she does not consider environmental assessment an appropriate tool for overall impact assessment. She also thinks that Bill C-69 needs to be overhauled. In its current form, it abandons a body of valuable jurisprudence and threatens to further discourage energy investments in Canada.

***Robert Lewis-Manning, President, BC Chamber of Shipping***

Mr. Lewis-Manning reviewed the challenges facing the export of energy products from Canada. Approving pipelines has been difficult. Enbridge spent \$400 million in a failed attempt to gain approval of the Enbridge Northern Gateway Pipelines project. The Trans Mountain pipeline is facing significant opposition from the Government of British Columbia, environmental groups and some First Nations. The Keystone XL Project pipeline and Line 3 Pipeline have also been stymied.

A further pending obstacle to the export of oil is Bill C-48: The Oil Tanker Moratorium Act. Bill C-48 prohibits tankers carrying more than 12,500 metric tons of crude oil cargo from stopping or unloading along British Columbia’s north coast. The Act does not affect current activity because no oil is being shipped in northern BC. However, in effect it serves as an export ban. The Act suggests to some observers that maritime transport is not well understood or safe. In fact, there is a substantial body of knowledge about it. Evidence on the benefits and costs of oil transport needs to be integrated, and respected, when formulating legislation such as Bill C-48.

Not all the news is bad for the energy sector. One notable success is the LNG Canada Project which will export liquefied natural gas from the port of Kitimat, and be the largest private sector investment project in Canadian history. Another positive note is the establishment of conservation areas along the BC Coast, and a systematic mapping of the coastline with input from the Government of Canada, the Government of British Columbia, and First Nations.



***CTRF Scholarship Competition 2019-2020  
Congratulations to the following students!***

**CN Scholarship**

Seyedkianoush Mousavichashmi – University of Toronto

**CN Scholarship**

Jacqueline Young – University of New Brunswick

**Transport Canada Scholarship in Sustainable Transportation**

Rushdi Mah'd Alsaleh – University of British Columbia

**Transport Canada Scholarship in Economics, Efficiency and Competitiveness in Transportation**

Gamal Eldeeb – McMaster University

**Transport Canada Scholarship in Economics, Efficiency and Competitiveness in Transportation**

Mohamed Elsayed – McMaster University

**Transport Canada Scholarship in Economics, Efficiency and Competitiveness in Transportation**

Patrick Meredith-Karam – Massachusetts Institute of Technology

CTRF wishes to thank the scholarship program supporters. They include CN, InterVISTAS Consulting, Transport Canada, and individual contributors. Thank you.

***Shaun Stevenson, President and CEO, Port of Prince Rupert***

***Port of Prince Rupert: An Overview***

***Luncheon Speaker: Wednesday, May 29, 2019***

***Report by: Lawrence McKeown***

Wednesday featured a joint luncheon with local members of the Chartered Institute of Logistics and Transportation. The keynote speaker – Mr. Shaun Stevenson – outlined how this seemingly remote port has transitioned from a bulk terminal handling grain, wood pellets and coal during the 1980s to a full service facility after adding a container terminal in 2007 and, most recently, the Ridley Island propane export terminal. In his talk, he pointed to the natural advantages of the Port including a deep water harbour and proximity to Asian markets. Once considered a disadvantage, the lack of local market access has allowed the Port to become a pure gateway to Asia-Pacific.

Part of the presentation was a listing of the impressive Port achievements interspersed with promotional videos. In 2018 for example, the Port handled 27 million tonnes of freight and is on target to exceed 30 million tonnes this year. The Fairview Container Terminal, with an initial 1.35 million TEU capacity, is slated for a phased-in expansion to reach 4 million TEU capacity by 2030. The Port has become an enabler of trade via strategic investments in infrastructure and a steady expansion. However, sustainability has been a key element with an emphasis on safety, environmental stewardship (via data and benchmarking) and community engagement (consultations and sponsorships).

The Port of Prince Rupert is a success story, and Mr. Stevenson as well as others deserve full credit. In terms of social licence however, it is insightful to compare it to the Port of Vancouver, featured earlier in the day during a plenary on Challenges of the Asia-Pacific Gateway. The Port of Prince Rupert consists of one railway, one terminal operator and one port authority situated in a relatively small and remote community (13,350 population), hungry for jobs and with plenty of greenfield options available. In comparison, the Port of Vancouver involves four railways, twenty seven marine terminals along with a multitude of warehouses, trans-load and container facilities all operating within a prosperous metropolitan area (2.7 million population) comprised of sixteen municipalities (and on treaty lands of several Coast Salish First Nations), having only brownfield development opportunities.

***CTRF 55th Annual Conference  
Montreal, Quebec  
May 24-27, 2020***

Once again we return to Canada's city of unrivaled joie de vivre, this time for CTRF's 55th Annual Conference. As those of you who were here for our historic 50th conference know, Montreal is a great place to host CTRF meetings. The city's renowned Old World charm infused with North American energy is unparalleled. Discover more on what Montreal offers at <https://www.mtl.org/en>.



The Conference will be held at the Double Tree by Hilton, situated downtown in the heart of the Quartier des Spectacles entertainment district. The hotel is just steps from Place des Arts, Place des Festivals and the Museum of Contemporary Art. Numerous restaurants and outdoor terraces are also within a few steps. The hotel is connected to Complexe Desjardins, a major indoor shopping mall and has nearby access to 2 Metro stations. It is also within easy walking distance of Chinatown and Old Montreal. A block of rooms has already been set aside with a conference rate for CTRF attendees.

A focus of the Conference will be on the theme of how we can best manage and build for the future at a time of unprecedented uncertainty and change. We plan to build on this through stimulating discussions, presentations and papers in areas including transportation policy, innovation and technology, future planning initiatives, funding and financing of infrastructure, data use and research requirements.



We invite you to submit your suggestions for themes to explore and plenary session topics to one or both of the following individuals:

Joseph Schulman, VP Program at [jschulman@cpcs.ca](mailto:jschulman@cpcs.ca)  
Don McKnight, VP Meetings at [dmcknight@damfconsult.ca](mailto:dmcknight@damfconsult.ca)

More details will be forthcoming in future editions of Foramation as the program is being developed. So mark this date in your calendars now! This is the one Conference of 2020 not to be missed.



**54e Conférence annuelle du  
Groupe de recherches sur les transports du Canada  
Montréal, Québec  
Du 24 au 27 mai 2020**

Une fois de plus, nous aurons le plaisir de nous retrouver dans la capitale canadienne de la joie de vivre dans le cadre de la 55e conférence annuelle du GRTC. Comme le savent ceux qui ont assisté à notre 50e conférence, Montréal est un endroit exceptionnel pour accueillir les conférences du GRTC. Le charme européen réputé de la ville auquel s'ajoute l'énergie nord-américaine en font un endroit incomparable. Vous pouvez en découvrir plus sur ce que Montréal peut offrir sur le site <https://www.mtl.org/fr>.



La conférence se tiendra au Double Tree par Hilton Montréal, situé au centre-ville, au cœur du quartier des spectacles. L'hôtel est à quelques pas de la Place des Arts, de la Place des Festivals et du Musée d'art contemporain. De nombreux restaurants et terrasses extérieures sont également situés à proximité. L'hôtel est relié au centre commercial du Complexe Desjardins, ainsi qu'à deux stations de Métro. Le Quartier chinois et le Vieux-Montréal sont également facilement accessibles à pied à partir de l'Hôtel. Un tarif de groupe est offert pour les participants à la conférence.

La conférence mettra l'accent sur les meilleures façons de gérer et de construire pour le futur, à une époque d'incertitude et de changement sans précédent. Pour y parvenir, nous comptons stimuler les discussions, les présentations et les articles dans des domaines tels que les politiques des transports, l'innovation et les technologies, les nouvelles initiatives de planification, le financement des infrastructures, l'exploitation des données et les besoins en recherche.



Nous vous invitons à soumettre par courriel vos suggestions de thèmes à explorer et de sujets pour les conférences plénières à l'une ou l'autre des personnes suivantes :

Joseph Schulman, VP Meetings [jschulman@cpcs.ca](mailto:jschulman@cpcs.ca)  
Don McKnight, VP Program [dmcknight@damfconsult.ca](mailto:dmcknight@damfconsult.ca)

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## ***Conference Paper Winners 2019 CTRF Annual Conference***

- The Ron Rice Award for the Best Conference Paper (\$1,500)  
**Eric J Miller, University of Toronto**  
*A Prospectus for Improved Long-Distance Travel Demand Models*
- Runner up Paper (\$800)  
**Sina Bahrami, University of Toronto, Matthew Roorda, University of Toronto**  
*Optimal Operations of an Automated Vehicle Parking Lot*
- Runner up Paper (\$400)  
**Hakan Andic, Canadian Transportation Agency**  
*Comparing Two Competing Models to Measure Annual Productivity Growth Rates in the Canadian Railway Industry*



Malcolm Cairns presenting the paper awards to Eric Miller, Sina Bahrami and Matthew Roorda, and Hakan Andic.



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