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Changing the Conversation

The Climate Imperative

Part 2: The Provincial Context

May 26th, 2015

Participants

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Ralph Torrie, Energy systems expert and entrepreneur

Merran Smith, Executive Director of Clean Energy Canada and a Fellow at Simon Fraser University

Professor Bryson Brown, Chair, Philosophy Department, University of Lethbridge, Alberta

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Ann Dale

We are starting the second in our Climate Imperatives series, talking about the provincial context for implementing the 10 steps we recommended in our document, Acting on Climate Solutions: Solutions from Canadian scholars. We have invited Sustainable Dialogue scholars to discuss their specific context, and Ralph Torrie, one of this country's foremost energy experts. Before we begin, could I ask each of you to introduce yourselves and the province in which you reside?

Jose Etcheverry

Hello I'm Jose Etcheverry and below is my contact information and key affiliations

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Catherine Potvin

Hello, I am Catherine Potvin, Biology professor at McGill University in Montreal, Quebec, and the leader of the Sustainable Canada Dialogues.

Natalie Slawinski

Hello, I am Natalie Slawinski, and my info is below:

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Ann Dale

Welcome, Catherine, Jose and Nathalie. I am looking forward to today's conversation.

Ralph Torrie

I am Ralph Torrie. I am currently an independent researcher and analyst with my own firm Torrie Smith Associates. My involvement with sustainable energy futures and with climate change response strategies dates to the 1980's and I spent most of the 1990's as principal

technical consultant to the International Council for Local Environmental Initiatives Cities for Climate Protection program, developing the methods and conventions for local climate change response strategies. I assembled and led the team that did some of the early climate change response policy work at the state and provincial level, including for California' AB32 and for the Province of Ontario's Bending the Curve strategy in 2008. More recently I spent two years as Managing Director of the Trottier Energy Futures Project where my focus was on we can reframe the "climate question" in ways that will expand the solution set, engage more players, and accelerate progress toward low carbon outcomes.

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Merran Smith

Hello,
I am Merran Smith, Executive Director of Clean Energy Canada and a Fellow at Simon Fraser University. We work to accelerate Canada's transition to a clean energy economy. I am based in BC and we work in BC, AB, ONT and nationally.

Happy to be here and part of the discussion today.

My contact is merran@cleanenergycanada.org
my twitter handle is @merransmith

Ann Dale

Shall we now move to our first question? In your opinion, how do the pathways to a low carbon economy differ in your province, or any province you study?

Merran Smith

In B.C. we have an interesting context.

a. **Electricity Grid is Already Clean:** B.C. already has very clean grid, wealth of wind, run-of-river and biomass. Large Hydro dams can play key role as a battery, and could help AB increase its renewable content in electricity and provide that 'battery' for AB as well.
b. **Leverage Electricity for transport and buildings**: Thanks to clean grid it makes it easier to clean up transportation and buildings.

c. **We have the policy!** B.C. has many of the policy building blocks in place, but they'll need to get stronger overtime. The carbon tax, clean electricity standard and clean fuel standard are excellent starts.

Ralph Torrie

There are many answers to this question, here are four pathways that Ontario is well positioned to take:

1. Net zero buildings. Low carbon futures will require that fuel and electricity consumption by commercial and multi-residential buildings be brought to nearly zero, or less, a trend that will stimulate revolutionary changes in the design and construction of buildings, possibly including the emergence of a global market in pre-fabricated building components. Ontario has more commercial building construction underway at any given time than any other jurisdiction in North America except Manhattan; there is a clear opportunity here to address greenhouse gas emissions at home while consolidating the province's position at the forefront of commercial building design and construction.

2. Comprehensive building retrofit. Like many economies in the OECD, Ontario has a youth employment problem, exacerbated by the hollowing out of the manufacturing sector. Low carbon futures will require that virtually the entire stock of existing residential and commercial buildings be retrofit for much greater levels of energy efficiency. Ontario could lead the way in showing how to mobilize an educated and trained but underutilized labour force in the design and execution of a comprehensive building retrofit program over a period of 20-30 years, yielding multiple social and economic benefits (Ontario imports virtually all of its heating fuel), while at the same time tackling an important source of greenhouse gas emissions.

3. The non-electricity sources. Ontario is among those jurisdictions where the carbon intensity of electricity has been brought to relatively low levels, at least for the time being. In such circumstances, the transportation, liquid fuel, and non-energy dimensions of climate mitigation loom large. Given its manufacturing heritage, its capacity for technology innovation, and its role as a global finance and business service provider, Ontario has the opportunity to take a leadership position not only in the technological innovation required for low carbon outcomes in these areas, but also in the financial and institutional innovation that will be required to accelerate deployment of low carbon solutions.

4. Bioenergy and the bioeconomy. Both on an absolute and per capita basis, Ontario has vast amounts of productive land, and agricultural and forest-based industries that face an uncertain future. Most analysts agree that, notwithstanding the much greater role for electricity in the low carbon future, the all-electric future is not yet feasible and that bioenergy will be an important part of 21st century low carbon economies. This presents yet another opportunity area for Ontario and for Ontario communities that have historically relied on forestry or agricultural production for their livelihoods.

Catherine Potvin

In Québec we already have 100% low carbon electricity, so the main challenge is electrifying energy provisioning. Transport is our main source of GHGs so there need to be serious thoughts on transport, including electrifying transport and promoting alternative ways of transport.

Merran Smith

Alberta currently has a lot of coal in the electricity but has the best potential wind and solar resource in the country.

We have done an analysis about how they could accelerate the phase out of coal, and increase their renewables by 2033. This also showed cost and that it has a small increase in electricity prices in the short term, but then results in electricity being cheaper than it would if they continue with the planned gas/coal mix.

The report is called Power To Change and can be found on our website, for your information.

Jose Etcheverry

In Ontario there are similarities and differences from the rest of Canada.

Similarities, we need to pay a lot more attention to the energy used for heating buildings and for transportation.

Differences...unlike BC, Manitoba, and Quebec Ontario still uses nuclear for electricity generation which is a problem for balancing variable renewable energy sources such as wind and solar.

Good news....Ontario no longer uses coal for electricity generation! We were told it was not possible to do back in 2004 but it is a reality since 2014...this is a great climate mitigation achievement and one that should be emulated in provinces such as Alberta and Saskatchewan

Natalie Slawinski

In Newfoundland, we are also nearing 100% low carbon electricity with the Lower Churchill hydroelectric project which will be completed in the next few years. A big challenge for us is transportation, especially given our low population density and physical isolation from the rest of Canada. We are also a heavily resource-based economy (mining, oil and gas, and the fishery) which poses some big challenges.

Merran Smith

Another thing to mention re: BC is that we have the economy wide carbon tax at $30/tonne.

This definitely helps the shift off of a fossil fuel based transportation system. The research shows that the impact was five times more than a price signal of $30 should have had. I think all the conversation about the carbon tax, and how to avoid it, made the public more aware of their driving habits and has been part of the shift for people to get out of their cars a bit more.

Ralph Torrie

In terms of the sustainability of the carbon tax impact, the "five times more effective than it should have been" result is worrisome as it suggests that the tax is having primarily a psychological impact, which is great for as long as it lasts, but once the novelty of the tax wears off we will see what lasting effect lies beneath...

Catherine Potvin

In QC we also have a price on carbon through cap-and-trade, but we think this is only one path in the transition to a low carbon economy, and we need programs clearly targeting transportation and moving away from "the single car" mindset of moving on the landscape. We see the price on carbon as an enabling condition, and the switch to low carbon source of energy as the backbone of the transition.

Ann Dale

Merran, the February edition of Alternatives magazine features articles by SDC scholars, and I wrote on the BC context and perhaps introducing a national Charter. I understand the Premier has just announced a Ministerial Task Force to look at next steps, would you care to comment on that?

Merran Smith

Yes, the BC government just announced that they will create a Climate Action Plan 2.0, which will update the existing plan. I and some other stakeholders were appointed to a Climate Leadership Team to develop these recommendations. We will have this done in short order! In time that the recommendations will go to Cabinet before Paris so the government can make some decision about what they will do.

We will be pushing for further electrification in BC in order to reduce our use of fossil fuel based transportation and home heating.

Ann Dale

Delighted to hear there will be a Charter 2.0. Do you think this could be applied federally?

Merran Smith

We certainly need a Climate Action Plan federally! It is extremely disappointing to see the Federal government again setting targets with no plan to get us there.

That said, there is significant action in many of the provinces with strong climate plans coming forward, with the policies to support the plans. Ontario, Quebec are to good examples.

And, with a new government in Alberta, I am hopeful we will see a new approach to planning for carbon reductions and policy action to make it a reality.

Ann Dale

Jose, and Ontario has some pretty progressive legislation enhancing the scaling up of energy cooperatives, we did a case study on the Ottawa renewable energy cooperative last year? Would you care to comment?

Jose Etcheverry

Yes a lot of great renewable energy cooperatives (RE COOPs) are developing here e.g. Solar Share and Oxford County Wind Coop; however, the future of the Ontario renewable energy sector in general, and in particular further growth of the RE COOP movement, is compromised by the technological lock-in that is posed by current commitment to repair Ontario nuclear plants...

That commitment will mean that nukes continue to enjoy too much market share and that all the province's money will be focused in two plant repairs in two tiny spots of southern Ontario (Bruce and Darlington)....

Instead of nuke repairs we should be putting those billions of dollars in developing RE solutions throughout all of Ontario (that will enable not just clean electricity, but clean heating and clean transportation solutions for everyone in the province)

Ann Dale

We heard in our last conversation that BC, Ontario and Quebec were leaders in the country, but it appears that other provinces are moving forward as well. Some provinces, however, because of their geography, have made more sustainable 'a priori' energy investments, and I am thinking here of Ontario's move to get off coal, and the price that Premier McGuinty paid for his leadership in this move and indeed, the price that individuals are paying in the province. But it is very necessary if we are to achieve our climate objectives, locally, provincially and nationally. So that brings me to the elephant in the room, what about emissions from Alberta and LNG investments in BC? How do we address these asymmetries?

Jose Etcheverry

Great question Ann...for Alberta the big opportunity is to learn from key leading jurisdictions and get off coal with renewables...developing a renewable energy matrix will also allow to tackle the other two elephants in the Alberta landscape...transportation and the use of natural gas in the tar sands...for BC...I was there recently and the decision of the Mayor of Vancouver and council to go 100% renewable energy gives me (and many others) a lot of hope/inspiration...

Merran Smith

Emissions from AB coal fired electricity are almost equal to the emissions from the oil sands. In addition, AB is spending about 1 billion $ every 5 years on health related impacts due to coal.

Interestingly, AB has the strongest wind and solar resource in the country.

With a level playing field, wind can already compete in Alberta. The challenge is that

1. The cost of carbon pollution needs to be added in to level the playing field. While AB does have a form of carbon pricing it is currently about $1.80/tonne which is far too low. This carbon pricing tool (the SGER) is up for renewal and the new government could put in place a much stronger price on carbon which would enable more renewables to come on line;

2. to secure the investment to develop wind, the developer needs some kind of commitment - a power purchase agreement - to secure the loans required. With AB's market based system this is not currently an option but it is a policy change that the new government could put in place.

Jose Etcheverry

Hi Merran...

Completely agree with you...all I would add is that it needs to be more than a PPA. For

paradigmatic change to occur and for investment to follow there needs to be a clear message from the new government that they want to tackle coal with renewables, conservation, storage, smart grids, EVs, district energy +++ and that they will provide a stable policy infrastructure to make that happen...then apply the policy lessons from the best jurisdictions and start getting rid of coal in a clear and organized manner. In short, clear targets/timelines and an ambitious and comprehensive set of policies to provide incentives for broad public participation.

Catherine Potvin

The possibility also exists for AB to examine carbon capture and storage for the oil sands. We fully agree that coal-based electricity should be phased out.

Natalie Slawinski

In fact, AB has already been investing in carbon capture and storage technology. Does anyone know where that technology stands? Last I heard, it was still prohibitively expensive, but companies continue to invest in that technology to make it viable.

Catherine Potvin

The last IPCC report indicates that carbon capture and storage is not currently resolved and poses telluric risks. Saskatchewan in fact is the province that built one of the first and only carbon capture and storage plants, so it has been a leader in Canada in this technology.

Ralph Torrie

Emissions from oil sands production are fundamentally problematic for the prospects for a low carbon future for Canada. The most promising idea for reducing the emission intensity of this production would appear to involve using cogeneration at the SAGD facilities on a sufficient scale to close down the Alberta coal fired power plants (which collectively emit more GHG than oil sands production I believe). This would hold out the promise of reducing the GHG intensity of bitumen to much lower than current levels but of course does not address the unburnable carbon problem which is essentially that the burning of Canada's oil sands resources is incompatible with climate stabilization.

The LNG question also goes to the issue of unburnable carbon, but the GHG intensity of the LNG production and transport to tidewater is not nearly as severe as that of the GHG intensity oil sands production with current technology...

Catherine Potvin

I don't know much about LNG and I'm not sure I want to get involved in the oil sands, but I strongly feel that in QC, which is also flirting with oil extraction in Anticosti island, that this is advancing towards a dead-end knowing that it is a dead-end, and time has come to move swiftly on clean energy and avoid investing in anything to do with fossil fuels, be it gas or oil.

Ann Dale

Well put, so we agree on leaving those assets in the ground and starting to deal with 'stranded assets' which will require a lot of innovation by several sectors--the investment and financial sectors, natural resource companies and governments. So, let's be big and bold, let's assume that all federal leaders in the upcoming election endorse your plan, Catherine, how could the Federal Government speed the take-up of provincial and local climate policies and accelerate innovation to meet our goal of a carbon neutral economy by 2050? Question is addressed to everyone.

Catherine Potvin

We propose two enabling conditions in our report: one is to put a price on carbon and the other is to stop the subsidies to the fossil fuel industry. So the first thing the federal government could do is engage with the provinces on the price of carbon and see how the QC and Ontario cap-and-trade and BC tax could be harmonized, because we say the price on carbon should be national. The federal government should examine and remove any (in)direct subsidies to fossil fuels. If this is done in two years, it can have a major impact. And this should be done with and not against provinces.

Merran Smith

1. **Put in place a significant Clean Energy Infrastructure Fund** to support transmission lines, smart grids, EV infrastructure, transit, etc.

2. **Ensure that there is a clear, effective carbon price signal across the country** (this is happening naturally, with BC, Ontario, Quebec and Alberta with some form of Carbon pricing so it will make sense soon for the federal government to create some kind of national 'approach' while letting the provinces continue with their chosen methods).

3. **Catalyze a culture that acknowledges that the world is shifting to a low carbon economy**, and that Canada can survive through that using our innovation and intellectual resources as well as the clean natural resources we are endowed with.

i was in Germany a few months ago and was pleasantly surprised by the enthusiasm to take up the low carbon challenge, foster innovation and create jobs in the new type of economy. They aren't avoiding it. They aren't denying it. They are leaping in and leading it. Canada could do the same.

Catherine Potvin

One of the goals of our report was to move away from doom and gloom and explain how the low carbon economy can indeed be seen as an exciting opportunity for change and investment, for the good of society.

Merran Smith

I think you did a great job of that! It did outline possibility, opportunity and a clean future. That is what the public actually wants.

I think one of our jobs is to help the public to understand that we can be prosperous, have jobs and a great quality of life, and not be tied to the fossil fuel economy. There is a role for fossil fuels and they are clearly part of the transition but it isn't an 'either /or' situation any more - Jobs or the Environment.

Last year we put out a report, Tracking the Energy Revolution, which looked at investment dollars, jobs, etc and we got a lot of media coverage because people were surprised to hear that things like - in the past 5 years more dollars have been invested in clean energy than in fishing, forestry or agriculture combined.

Ralph Torrie

How could the Federal government speed the take-up of provincial and local climate policies and accelerate innovation?

One word: leadership. Lead the development of east-west cooperation for interprovincial electricity trade. Lead the development of innovative financing of low carbon investments. Lead the establishment of a national building and housing industry that sets a new global standard for advanced building technology. Lead the establishment of a new vision for Canada’s vast agricultural and forest lands and the industries and communities that depend on them. Lead the logistics and freight transportation industry in development and executing a low carbon strategy. Lead in the application of public investment in the long term solutions.

Catherine Potvin

We fully agree. Leadership is essential and that is what we would hope governments do.

Ralph Torrie

The federal leadership drought has being going on for so long now that we are beginning to forget what leadership looks like. I recently conducted an informal poll of about ten experts in different fields from across Canada (developer, waste manager, construction industry association, urban planner, ENGO, logistics company manager...) and asked them simply, without reference to climate change per se, If you found yourself in a conversation with the Prime Minster and he asked you ``What can the federal government do to help you? , how would you reply? Everyone was at least temporarily stumped by the question and nobody came up with anything more creative than "Don't tax me so much", or "Tax them more" or in general "just keep out of our way"...

Ann Dale

Any other thoughts on the role(s) the Federal Government should play. Adopt a national charter governing all public sector buildings would be a good first step?

Jose Etcheverry

Here is from our report:

POLICY ORIENTATION 2
Include aggressive goals for low-carbon electricity production in federal and provincial climate action plans.

And here is how Germany is implementing that advice (their world famous *energiewende*)

http://energytransition.de

Ann Dale

Jose, and part of the transition will be using cleaner technologies in existing industries as we transition?

Jose Etcheverry

Perhaps Ann.

However, I get more excited about new ways to look at the solutions..

Here is our campaign

http://go100re.net

Ralph Torrie

Local governments will be more important in achieving low carbon futures than they need to be in achieving lower carbon futures. The identification and deployment of local solutions for low carbon futures requires first and foremost capacity-building inside local governments and agencies. The foundation is energy and emissions “literacy” – local agencies must be able to “see” the energy and emissions implications of their capital and operating budgets and of their regulatory and policy mandates before they will be able to identify low carbon alternatives. This includes not only or even primarily opportunities for greater efficiency of fuel and electricity use or lower carbon fuels, but most importantly the ability to see ways of meeting community economic and social needs and aspirations in ways that moderate the energy service demands (eg. access with less mobility), and also including institutional and financing innovations that support the acceleration of low carbon outcomes at the local level. Senior governments must support this capacity building, reward leadership and innovation, and clear the barriers to the institutional and financial innovation needed to accelerate deployment of low carbon solutions.

Natalie Slawinski

I agree that local governments are very important. In addition to its 2011 Climate Action Plan, the Government of Newfoundland recently announced its plan to "green" government buildings and operations: http://www.exec.gov.nl.ca/exec/ccee/pub ... n_plan.pdf

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Catherine Potvin

In our report we mention the importance of infrastructure, because civil servants are developing infrastructure that will stay for 30-40 years so climate change mitigation must urgently be woven into any decision on infrastructure, due to the time lag legacy.

Merran Smith

I really agree that the Federal government, besides taking LEADERSHIP, needs to focus on infrastructure. There is a huge need for this and it requires someone with the budgets and long planning horizon of the Federal Government or it will be challenging to build out the clean energy infrastructure required for the transition.

It will be difficult to be an effective 21st century economy with 20th century infrastructure.

Ann Dale

Ralph's comment leads nicely into our next question. How could the Federal Government speed the take-up of provincial and local climate policies and accelerate innovation? Or given Merran's information that Vancouver is committed to 100% renewable energy, could we convince the Federation of Canadian Municipalities to lead the way to have all large urban centres commit to the same goal?

Merran Smith

I've given some ideas earlier about what the Federal government could do.

I also agree that municipalities are key implementers of the path to the low carbon future. Here are a few thoughts on how provinces could help municipalities:

a. **Connecting to markets:** Provincial government can help through trade missions – linking clean technology entrepreneurs with growing markets in India, China and Europe.

b. **Coordination on policy:** Cities don't have access to all the policies they need to achieve their targets. Transportation is a particularly difficult area. Transit depends on provincial funding – take the recent transit plebiscite for example. Cities also don't have the powers to mandate new electric vehicle technologies – Vancouver has a 100% RE goal, but doesn't have the tools to shift vehicle choices.

There is an exciting growing movement of cities committing to 100% renewables. What is exciting is that a few years ago that would have been considered 'crazy' and now, there are dozens of cities already publicly committed and the list is growing.

Catherine Potvin

From my dealing and discussion with city people, a permanent difficulty is funding because much of the revenues of cities come from taxes, and so municipal tax would tend to make cities friendly to big development that would bring money to the city. So there is a need to revisit the funding of cities for climate change. This is something we mention in our report.

Merran Smith

Yes, this is where a Federal Clean Energy Infrastructure fund would be very helpful. We have outlined some details on this and I will look for a link and post it.

Catherine Potvin

The Federal government has regulatory power for things like building codes, and emissions from cars and trucks. It can reduce or remove subsidies to the fossil fuel industry to create a more level playing field. And it could certainly act as a leader, creating a forum where major cities and provinces could come and meet. Because it has money to distribute, it could distribute money for win-win strategies. For example, paying for electrification of trolley buses in cities, provided cities reduce parking on roads to increase efficiency of trolley buses. So the Federal government could provide measures that enhance the actions of cities and provinces.

Ann Dale

And if it eliminated all oil and gas subsidies, that cost savings could be directed towards building more sustainable transportation infrastructure, a mandate that all new infrastructure spending will be directed to sustainable infrastructure.

Ann Dale

A question from our e-audience. “In Prince Edward Island, municipalities are creating climate change action plans, the provincial government has yet to take action here, the large provincial institutions (subsidized by the province a lot- the university for example) have programs addressing sustainability...although I wonder from a political standpoint how a small province like us has not acted swiftly to incorporate a climate change action plan which includes policies addressing low carbon electricity and pricing carbon at our provincial level.

So a question for all of you- How can a small province, unique to Canada, prove to become a stepping stone for other provinces in developing and encouraging positive actions towards climate change adaptation and pricing carbon?”

Jose Etcheverry

I am currently collaborating with the Cities of Barcelona, Spain and Woodstock Ontario on the development of 100% RE initiatives and what we have observed is that if you are ambitious and vocal about it then international and regional support starts flowing-in to help you...

Catherine Potvin

In my mind, I don't see size as a deterrent for action. PEI has a lot of wind power according to our energy map and maybe this is a way forward to take advantage of.

Ralph Torrie

PEI's size is an advantage when combined with its relatively low population density, lack of large sprawling urban settlements, relatively high fuel and electricity prices, and its Island culture. It ought to be more manageable to develop an ecosystem-based approach (perhaps watershed based) to sustainability and self-reliance than in other provinces. Remember the Ark!

Natalie Slawinski

Good point. A small size can be an advantage in several ways. Cross-sector collaboration may be easier in places like PEI and Newfoundland where everybody knows one another (a bit of an exaggeration, but not much...). For instance, I regularly run in to local politicians, community activists and business leaders, which makes it easier to have informal conversations in addition to formal conversations.

Merran Smith

I think like any jurisdiction, PEI can take the lead by committing to a vision and targets like 100% renewables, which will then lead to strategies for transportation, buildings etc. PEI has lots of wind and could be a leader there!

Jose Etcheverry

Further to my note on international collaboration....
We are looking for key people that are interested in developing their expertise in 100% RE modelling...

If you are that person or know someone that should be invited to such workshop (we are particularly interested in folks with paradigm shifting capabilities/potential/interest)...send me a note to rejose@123mail.org

(I'm helping in the planning of an interdisciplinary workshop on 100% RE skills development for October/November 2015)

Ann Dale

In terms of the proof is in the pudding, our Action Agenda for BC Decision-Makers shows the economic, social and ecological benefits of climate innovation. BC reduced its GHG emissions while remaining competitive with the rest of Canada. As researchers we need to do a lot more in illuminating the co-benefits of acting. One of the things my research team did in the province was to engage both elected officials and their officials in peer-to-peer learning exchanges, an open dialogue with the research team, strategic partnerships between local governments and colleges and universities is key to moving our research out more quickly to those on the ground.

Catherine Potvin

One of my motivations to get the SCD going was a discussion with Brazilian colleagues. Brazil has been successful in reducing deforestation in the Amazon, something that is a very complicated environmental and economic issue. According to my colleagues it came about through collaboration between government officials, scholars, NGOs and the private sector.

Merran Smith

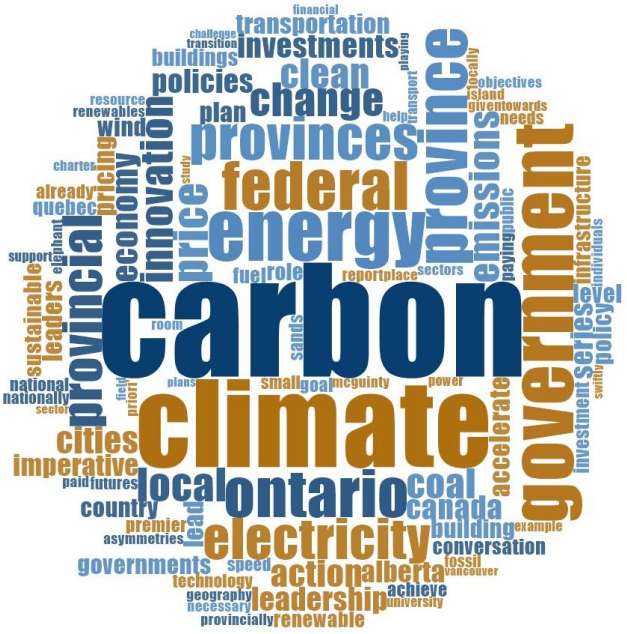
There is great power in jurisdictions that are taking action to share that story with other jurisdictions. We have, for instance, taken someone from the Texas Renewable Energy Industry assn to Alberta to speak about how they developed the political support and leadership from Republicans to get policies to drive the wind and solar industry. It was amazing to witness how Albertans could really hear this story coming from a Texan.

I recently came back from Boston where I was part of a delegation to talk about the experience in BC of the carbon tax. Their legislative leaders really wanted to hear about how it played out in the following election - and to learn the government got re-elected. The business community was encouraged to hear from BC business leaders that they were doing fine...

One of our biggest challenges now is fear of change, not that the technology isn't ready or cost-competitive...

Chris Strashok

As we approach the end of the dialogue, I thought everyone might be interested in seeing a 'word cloud', capturing the main thoughts and ideas of the conversation. The sizing of the elements in the word cloud indicate the amount of references. It's obviously a tool that works very much on the 'overview level', but it works as a visual summary.



Ralph Torrie

A strong YES to Rob Newell's point about co-benefits from the e-audience. In fact, looking back at what has worked most effectively in reducing GHG emissions to lower levels than they otherwise would have been, it has been the co-benefits that have almost always been the driving motivation, not the prospect of emission reductions or even of financial savings on fuel and electricity. Fuel and electricity cost savings and emission reductions are more important for incremental change than they are for the transformative changes that can bring about a low carbon future. Those transformative changes must appeal to the things that really motivate people, and reducing greenhouse gas emissions is not on that list, present company excepted. The narrow passage to low carbon futures depends on finding and exploiting the synergies between the so-called co-benefits and the low carbon outcome we need. Keep in mind that given how much greater the world's conventional fossil fuel reserves are as compared to the amount that can be safely burned, we must recognize that the low carbon futures we seek will be futures in which we are surrounded by a surplus of relatively inexpensive and easy to produce fossil fuel that we choose not to burn. We have to want to live without fossil fuels not because we must but because of what we have mistakenly called co-benefits but which are in fact the prime movers of the transformation we need.

> Rob Newell – e-Audience
>
> Just picking up on earlier pieces of the discussion…great points from Catherine and Merran around moving from "doom and gloom", and reframing this as moving toward a more prosperous living in general. I've often felt that many climate action strategies can be appealing to even climate deniers if the co-benefits are highlighted, i.e., a walkable city contributes to quality of life and health.

Ann Dale

Our report, a remarkable consensus from 60+Canadian scholars, clearly shows that we can achieve meaningful reductions in our GHG emissions by 2020 and a carbon neutral economy by 2050. Our map shows this country's tremendous renewable energy resources, a blessing of our geography. And we believe it will be achievable while improving the economy, as this is the way the world is moving globally, we can chose to build state of the art sustainable infrastructure or continue to fall behind on aging infrastructure--the choice is ours and we must act today, with the requisite leadership.

Any final comments, before we close.

Catherine Potvin

Thank you, Ann, for your amazing leadership.

Merran Smith

Thanks so much for hosting this and for your work towards this vision!

We look forward to working with you to help get this story out to the public and to build support for the vision amongst different stakeholders and governments. The 100% renewable economy is where the puck is going (I always like to say) and Canada should be a leader in this. And we can be.

And, we will be putting out our 2015 version of the Tracking the Energy Revolution in the next month. Watch for them!

Thanks!

Jose Etcheverry

Humans created the problem and therefore we humans can solve it...

For me the key point here is that we, Canadians, need to show the rest of the world (and to our own families) that we still care... not by only using words but with real actions and solidarity

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Natalie Slawinski

Yes, thank you Ann!

Jose Etcheverry

Merci beaucoup

Bryson Brown

This is a very encouraging discussion—the key elements (all taken up in the plan we initially developed) of looking ahead to reduce demand, put a price on carbon and end subsidies for fossil fuels while planning and building new energy systems and infrastructure compatible with low to zero net carbon emissions, seem to be accepted across the country.

My main worry about getting policies in place here in Alberta is that I can't see any way to avoid a very difficult political challenge. Exploitation (let alone further development) of bitumen reserves can't be continued for much longer.

Ending coal-fired electricity could help underwrite a continued social license for bitumen production (and I think the new government is hoping this will work). But given the high costs of extracting and refining bitumen together with carbon budget considerations showing most oil reserves will have to be left in the ground, in the mid to long-term, I think Alberta's bitumen must be part of the oil we don't burn.

The province isn't ready to face this now. I don't think the NDP government can turn that corner in this term, and possibly not in a second term either. Carbon capture and sequestration was cited in the discussion as a possible way out of this, but despite massive subsidies (as I recall, about $1.8 billion in AB alone, with the last 200 million pulled from the fund late in the game, presumably because targets weren't met), it's still not a viable solution: aside from cases like the new Saskatchewan system which uses captured CO2 to enhance oil recovery (a well-established technique) I think it's unlikely to be economically viable. When we consider applying it on a larger scale, the infrastructure required to capture and store even half the CO2 we now produce looks prohibitively expensive to build and operate, and the potential for breakthroughs in capture, pumping and injection is limited: this is well-known chemistry, physics and engineering.

A second challenge that's especially important to Alberta is the agricultural sector. Fixing nitrogen and operating heavy equipment in the field both depend on fossil fuels (of course this is related to the challenge of heavy industry in general raised in the SCD plan). I suspect the greater immediacy of this challenge for farmers and rural populations in general affects political discourse in rural areas: I can easily imagine driving an electric car, but I doubt many farmers envision electric, 800-horsepower 8-wheel tractors… We have some local contacts, including people at the Lethbridge research station, who hope to make our agricultural system less dependent on massive net energy inputs, in part by transforming waste streams into sources of energy and fertilizer.

My hope is that progress towards a low-carbon economy across Canada will eventually lead the people and government of Alberta to a vision of our future that isn't based on oil and gas and that transforms the energy systems underlying agriculture. But the transition to that new vision will depend on successful implementation of earlier stages, the emergence of a more diverse energy system in the province, and (I hope) the new sense of possibility that success will lead to.