



Energy in Canada @ 150 and Beyond Embracing the Excitement of Energy

By Al Monaco, President & CEO, Enbridge Inc.

One in a series of papers prepared by Canadian energy sector leaders – at the invitation of the Energy Council of Canada – exploring key aspects of our ongoing national energy story on the occasion of the 150th anniversary of Confederation.

Summary: In the following remarks, presented on the occasion of receiving the Canadian Energy Person of the Year award for 2017, Al Monaco urges greater awareness of the positive ways in which energy underpins our lives and technological advancements. In a world no longer driven by concern with energy scarcity, but still facing rapid population growth, he posits five key factors that will shape our energy future, and argues that North America is developing a tremendous competitive advantage as a global supplier of low-cost energy. Achieving its full potential, however, will require finding means to move beyond current polarized debates.

Energy Underpins it All

Think about most exciting things happening in our world today:

- Technology (AI; digital & robotic technologies; blockchain);
- Health care (surgical robots, genome editing);
- Transportation (ease of air travel, Uber, electric and autonomous vehicles); and
- Entertainment, sports and recreation (think virtual reality theme parks).

A short while ago, these were viewed as disruptors; today they're reality.

And while we think a lot about these exciting technological advancements, there's one thing that underpins all of it – energy, which also has its own technology story. But we don't think about Energy in the same way. It takes unfortunate tragedies like Harvey and Irma to make us think about what life would be like without energy.

In fact, when some people think about energy – particularly hydrocarbons – they see it as a problem. It's ironic, because energy pervades every aspect of our lives – in a very positive way. That reality gets lost in what is a deeply polarized debate about energy in society today. In my view, that debate is no longer one of extremes where activist environmental groups are pitted against oil companies.

When some people think about energy, they see it as a problem.

It's mainstream, and here's why I say that. If we took a national poll, a segment of people would say that hydrocarbons are inconsistent with the environment and action on climate. Another segment would say that energy is critical to our economy and way of life. My goal in this paper is to unify these two points of view by talking about the future of energy. Because in my view,



when it comes to energy, the environment and the economy are not mutually exclusive.

Before we get to the future of energy, let's recap where we've been.

The Future of Energy

The focus of energy used to be on supply. Our biggest concern was running out of energy, so we produced and consumed whatever we could – wood, coal, and over time, oil and gas.

We now know that the world isn't running out of energy. As we've removed the shackles of energy scarcity, energy is now free to be shaped by demand, consumption and end-use. Energy is now ruled by consumers; it's about getting the kind of energy they want, when they want it, and how it gets to them. Consumers are saying they need low-cost, efficient and sustainable energy.

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At the same time though – and we don't talk about this enough in Canada – global energy demand isn't slowing; it's growing, rapidly. Two hundred years ago, there were less than 1 billion people in the world. Now, we add 1 billion people every 12-14 years. There are 7.6 billion people on the planet today, but we'll have nearly 10 billion by 2050. By this time next week we'll have added another 1.5 million to the population.

These people are going to need energy – lots of it. And, I believe that North America is developing a tremendous competitive advantage in providing the world with the low-cost energy it needs.

With that, there are five things that will characterize our energy future.

1. Permanent reduction in the cost of energy

First and foremost, we've entered a new phase of energy cost competitiveness. Some say that the cost reductions and supply growth we've seen in the energy sector are temporary. I think much of it is permanent and there is opportunity for more. Technology is not just about drones, it's transforming every part of the energy business!

Technology has unleashed massive resources beyond anybody's expectations. Increased supply is putting downward pressure on prices, changing the economics of our industry and forming a new energy paradigm of "lower forever". I liken this to a virtuous circle effect where lower cost energy supply pushes out higher cost supply, which begets more intense competition for the marginal unit of energy supply to come on.

That in turn induces more technology, and so on. Natural gas is being found at below three dollars! And, new Canadian energy champions – like ARC and 7 Generations – stack up against anyone in North America. The full cycle cost of North American oil has dropped from \$70 per barrel to \$56 per barrel in five years. The breakeven cost of U.S. shale oil is heading to \$40 (perhaps \$35 or lower) and the oil sands are on the way to \$50, or less.

That's what's happening on the transportation side as well. We use digitization to maximize our capacity, conserve power, and enhance reliability. Big data platforms allow us to assess billions of pieces of information from sophisticated tools that inspect pipelines. Cost reductions in energy supply are real and lasting.

2. Greater energy efficiency

Second, our future will be characterized by greater energy efficiency.

Aggressive fuel standards, efficiency measures and consumer behavior are driving energy intensity lower. In 2016, if it hadn't been for



energy efficiency, the world would've used 12 per cent more energy than it did. That's the equivalent of the EU's energy requirements for one year.

Between 2000 and 2016, energy use per unit of economic output in the industrial sector fell by nearly 20 per cent. And, as one of North America's largest gas utilities, our DSM programs reduced consumption by 10 billion cubic metres. This trend will continue to further improve global energy efficiency.

3. A more sustainable energy future

Third, lower emissions will drive a more sustainable energy future.

In the U.S., fuel switching from coal to natural gas has brought emissions below 1992 levels, while the economy grew by 80 per cent. You know all about that here in Ontario. And, LNG will do the same thing globally – led by low-cost North American natural gas exports.

And, that's not all. Since 1990, oil producers have reduced emissions intensity by up to 50 per cent. We've seen leaps in innovation for Canadian energy through technology accelerators like EVOK, COSIA and the Clean Resources Innovation Network.

Suncor's new Fort Hills operation will deliver oil with a carbon intensity that's four per cent below the average barrel refined in North America. This kind of performance will give Canadians the confidence that we can meet local and global emissions reduction goals, while continuing to grow our economy.

The fact is that Canadian energy will fit prominently in meeting global demand, not just because we have a lot of it, but because we produce it sustainably with the environment in mind.

4. All sources of energy supply

Fourth, the world will need all sources of energy supply.

The cost of renewable energy has dropped dramatically. Just look at the cost of offshore wind. A recent renewable auction in the UK produced record low prices for offshore wind energy. A remarkable 50 per cent cost reduction in two years! Renewables will grow at a fast pace – no doubt about it.

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Even so, conventional fuels will still make up 75-80 per cent of global energy requirements in 2040. Natural gas will see the highest growth given its low cost, efficiency, existing infrastructure, high reliability and lower emissions. That was part of our thinking with the Spectra transaction.

Boeing and United are looking at fuel efficiency and sustainable biofuels, but there is no immediate zero carbon solution for air travel, shipping or heavy freight. There are no easy replacements for hydrocarbons that provide the energy intensity for heavy industry (steel, cement, chemical processes). And, while EVs are showing impressive growth, it will take a while to penetrate the market.

My point is that we're going to need all sources of energy supply to feed dynamic global demand. And with greater sustainability and technology, we can ensure we keep emissions in check.

5. Greater global energy connectivity

Fifth – global connectivity – this is the one that brings this all together.

Our energy future will be characterized by the connection of low-cost supply with ever-



growing demand. And, North America will be a leading global energy exporter. Let me explain.

Half of global energy growth through 2040 will happen in non-OECD countries, including China and India. At the same time, North America is developing an unparalleled competitive advantage in providing low-cost energy. That synergy, between global demand and North American energy supply, is huge. Since lifting of the U.S. crude oil export ban, crude exports have exploded.

The natural gas story is even more exciting. By 2025, North America is expected to be one of the largest exporters of natural gas, or LNG, globally. And, the U.S. is already the second-largest exporter of natural gas liquids, having built nine new export facilities since 2012.

You can see what I mean by the North American energy advantage. And it's probably clear by now that rather than looking at protectionist measures, we need to think of North America as an energy trading power house.

Yet, realization of that opportunity depends on the continued connectivity of our North American energy markets – the largest and most integrated energy system in the world. We have low-cost supply; we have cross-border infrastructures for electricity, oil, natural gas; we have deeply integrated supply chains and labour markets; and we have technology to reduce GHGs.

In short, we have the ability to fuel a thirsty, growing global economy. We need to preserve that advantage, and Canada is a big part of that.

Challenges and Building Public Trust

I hope we agree that this vision of a more affordable, abundant, efficient, sustainable, and globally connected energy future is an opportunity. But, to realize our competitive advantage, we need new and timely

infrastructure. Opposition to energy development – and to pipelines in particular – is making that difficult.

It's resulting in major permitting delays; what used to take two years now takes four or more. More importantly, there's very little predictability in timelines. At minimum, that drives higher costs and increases the cost of capital. Worse, it locks out capital investment required to unleash the competitive advantage.

What do we need to do to enable this positive energy future? One element of that is building the public's trust in what the energy sector does.

Realization of opportunity depends on connectivity of energy markets.

At Enbridge, we're pushing ourselves – every day – to be truly world class on safety and environmental protection. We have changed the way we engage with landowners, communities, Indigenous peoples, environmental groups and governments. We're investing more time on the ground with communities – not just “consulting”, but acting on the input we receive. Today I spend a good deal of time engaging our stakeholders, letting them know what kind of company we are.

We've made building sustainable relationships with Indigenous communities a top priority. We're working to find solutions that respect Indigenous peoples' strong connection to the land and the natural environment and that involves shared economic growth.

This is a tall order, but I can see how partnerships between energy companies and Indigenous communities will be a key driver to reconciliation between Canada and Indigenous peoples. At Enbridge, we believe that sustainability and shareholder value creation are entirely compatible. In fact, we've delivered



strong dividend growth for over 20 years. And, we expect that to continue.

Conclusion: Canada Needs to Get on Board

To close, North America has the potential to be an energy export juggernaut. To achieve this vision, we need to get beyond the polarized debate. The time has come to develop pride in the role that the Canadian energy sector is playing.

We need to acknowledge how energy fuels our quality of life. And, we need to be equally excited about the role Canada can play in reducing global GHG emissions.

The time has come to develop pride in the role of Canada's energy sector.

I believe this is a vision worth pursuing – a vision that unifies Canadians. Where we embrace energy in the same way as those “exciting” areas I talked about at the beginning; a vision that acknowledges that energy and the environment can go hand in hand. And in many ways, Canada and North America have already done a lot to prove that. I’m here to tell you that Canada’s energy sector has embraced change.

And – if you look carefully – I think you’ll see that the future of North America’s energy sector looks very bright.

So let’s make it happen, by capitalizing on our approach to lower cost, sustainable and globally connected energy.

Al Monaco has been president and CEO of Enbridge Inc. since 2012, and also sits on the company’s board. He previously served as president, gas pipelines, green energy and international. He has more than 30 years experience in the energy industry including the upstream oil and gas exploration, development, and pipelines businesses. He was named 2017 Canadian Energy Person of the Year by the Energy Council of Canada.