



Hon. Glen Murray, the Ontario Environment Minister, recently spoke with David Arkell, CEO of 360 Energy. Minister Murray spoke about climate risks, his hopes for the future and the challenges of transitioning Ontario to a low carbon economy.

David Arkell: Why should we care about climate change? Why is this an important policy for the Ontario Government?

Glen Murray: I think it's certainly important to the Ontario Government and Ontarians, but certainly important wherever you live in the world. I would argue, the most important priority anyone faces in their lifetime, is climate change. If we fail to address it, there aren't a lot of other things we will be doing given the consequences of not getting this right.

David Arkell: How do you frame this issue to communicate its importance?

Glen Murray: In Ontario we generally talk about two numbers – 4 and 6. One number is to be embraced, and one number is to be avoided. The number we need to avoid is 4 degrees Celsius mean temperature change. This is what we are tracking for right now. When you get anywhere over 2 or 3 degrees Celsius, you are getting into an area that is problematic. You're getting into a temperature change that is so drastic in such a short period of time, that it will be hard for our species to survive. It means a loss of food supply. It means all the things we do to distinguish ourselves as civilized. All the things that define an economy are dependent on a stable climate.

There's growing concern here in Ontario of the severity of this challenge we face. Climate change is quickly approaching - in decades not centuries. We need to act quickly to avoid that, to ensure we stay under 2 degrees Celsius. The latest science suggests we have to be less than 1.5 degrees Celsius.

The second number we need to embrace is 6. \$6 trillion is the estimated growth in the economy as we move to a low carbon economy. To put this number in context, the tech boom in the West - that would be North America, Europe and Japan - was worth \$1 trillion to our economy in a very short period of time. The low carbon transition will be an opportunity six times as large.

David Arkell: What kind of opportunities do you envision?

Glen Murray: Here are some of the ways it would be an opportunity. Re-purposing our auto sector into electric vehicles. It means building net zero buildings - which means huge opportunities for forestry.

The low carbon transition also means rethinking how we use things we take for granted. Oil will have to be treated as a much scarcer resource. We don't have substitutions for oil, including the components and technologies of a low carbon economy.

It presents some real challenges for the economies of Alberta and Ontario. Our economy relies heavily on automobile manufacturing. Cars burn a lot of oil and fossil fuels. The Alberta economy still relies heavily on oils and fossil fuel extracting and processing for its base. There is actually a lot in common for Ontario and Alberta in terms of what they have to do in the next couple of decades to transition their economies. In some ways, we will have to look at oil and automobiles differently from the way they are looked at today.

Both those industries have provided our economy and Alberta's with a great deal of wealth, which we now have to use wisely, as we move in to a more innovation driven economy. We have to use those resources with a higher level of productivity than we have used them before.

There is a whole opportunity in Canada from transportation to fuels and buildings. Those are three big areas where we have to change and open up global markets for low carbon technology. We are world leaders in building materials. We find companies in Canada that are leaders in glass, wood and composites, clean technologies, Information and IT technology solutions to manage climate in buildings. Vehicles - electric vehicles, low carbon vehicles, light weight vehicles.

The opportunity is, that we are about to go through a revolution bigger than the industrial revolution. Can we detach ourselves from the assumptions that we are always going to make the same sort of cars, that we're always going to be pulling the same oil out of the ground for the same purposes? Can we re-purpose or reinvigorate some of our traditional industries and build new industries on that base over the next twenty years and maintain a level of world leadership? That's the challenge and that's the opportunity.

David Arkell: That's a huge task. What do you see as some of those critical steps we need to take?

Glen Murray: Some of those steps we have already taken, like closing coal plants. For Ontario, that was the largest reduction of greenhouse gases. You can't ask others to reduce their emissions unless you're prepared to do something as well.

The other piece is, you have to look at where oil is being burned. That should not be lost on people. You can't just blame oil emissions on Alberta. We have as much responsibility in the jurisdictions that consume and burn

fossil fuels as those that produce it. We have to avoid finger pointing. That's A) wrong and B) not very productive if you're trying to move something like this forward.

When you say what's next, Ontario has to catch up to Alberta, BC and Quebec and actually try to develop a price on carbon. We are looking for an approach that is economically positive, that affirms higher levels of investment in innovation and productivity in our business sector that actually tries to create some sort of framework across Canada. It really has now fallen to the Provinces to build those relationships and to do it with our trading partners in the United States. We need an approach that has certainty of reducing greenhouse gases at a rate that will avoid those temperature increases, but also in a way that creates a pathway to a stronger economy. For us the next piece is putting a price on carbon.

The piece after that will be to look at our transportation and land use. We have to reduce sprawl, we have to build communities where people live, work and play in the same neighbourhood. The issue of proximity is as important as connectivity. By proximity I mean you should be able to go about taking your kids to daycare, buying groceries, and going to work, without burning a lot of energy. If you can organize communities spatially to be more integrated where people can walk and use public transportation more, it really reduces greenhouse gas emissions.

The energy and levels of greenhouse gas emissions out of buildings are very high. In Ontario, if you took transportation, land use, and buildings you would account for about two thirds of our emissions.



David Arkell: You are very ambitious

Glen Murray: We all have to do that. There isn't an alternative. With climate change, it's not like you can "sort of" get there. It is not something you can "sort of" make a dent in, and it will be okay.

This is not a linear process. We already have enough carbon dioxide in the atmosphere right now that we have triggered a process of ocean acidification. The level of carbon dioxide right now going into our oceans is already sufficient enough to be killing our major reefs. The Mesoamerican coral reef is 25% dead, due to a one degree

change in ocean temperature, which isn't that great. 25% of the world's coral reefs are dead and about 40% are severely damaged and likely to die in the near future. If those reefs die off, or continue to get damaged at the rate that they are, that puts at risk species and reefs that are vital to survival on this planet. 60% of marine life in the oceans is dependent on those reefs. Reefs cannot be replaced. There is no human formula that can replace them. That's a tipping point we passed. But we are not at a point of no return. We now have something we need to do - to DE-acidify the oceans or dramatically slow down the rate at which oceans acidify.

The challenge we have, is we are now living with the carbon dioxide emissions from when I was in high school - public school actually. It's a fifty year process for nature to take greenhouse gases out of the atmosphere. So we have pre-determined what the impacts of carbon dioxide are for our planet for the next fifty years. Things are going to get a lot worse over the next four to five decades. There's not much we can do about that. This is why I talk about my grandchildren and not my children. It is because there is nothing I can do for my son. I am the last generation in my family that will know normal climate. His is the first in my family to not know normal climate.

For my grandson who is now five, if he is to inherit a livable planet, it will depend largely on what we do. By the time he is 55 he will be the first to live in a climate where the impacts of the releases of carbon and methane and other greenhouse gases will be most severely felt. I don't think we are having a serious enough conversation in Canada about it.

David Arkell: What can we do to help out in this process?

Glen Murray: I don't drive a car. We are a two bicycle household. Both my partner and I ride our bikes to work. I lost 80 pounds, my cardiovascular health improved. My doctor tells me it is that of a 30 year old. I've never felt better. My quality of life is improving.

We use eight times as much energy as we did during the Second World War and four times as much energy per person as when I was in high school. It's not unreasonable, if I could get back to a level of energy consumption I had when my parents raised me. Our houses are much bigger. We are heating more space now. Per person, we now drive a lot further for a lot longer. It's really a bit of back to the future.

A lot of the way we are living is with obesity and cardiovascular disease. All the things that are out there right now are a result of living in a world where we are managing our lives in a way that is not sustainable. There are linkages between how healthy we are physically and the health of the planet. You eat better; you're probably eating more vegetables and more local food. If you're physically active; you don't need a gym membership - just walk or ride a bike to work every day. We aren't doing those things as often as we should.

There is actually some great research from the Center for Disease Control in the United States. The lowest levels of cardiovascular illness and obesity are in neighbourhoods where people have a park, a ravine or some trail to walk down or an interesting main street that is a pleasant to walk on. It's that simple idea of not having to put in a litre of gasoline to buy a litre of milk.

David Arkell: How many people actually have that full understanding? Actually I think it's the responsibility of end users to start doing stuff. We can't rely on Government to fix our problems.

Glen Murray: The science is so solid. But, if you want to be a denier, tell me why you wouldn't want to do those things. Canada lags 25% behind the US in productivity. Why wouldn't you want to close the productivity gap? That would give the average Canadian \$7,000 more disposable income. So if you are like a rabid

Republican right wing activist, don't you want to improve the productivity of your economy and increase your household income by \$7,000 per person? To me that is the most conservative of conservative notions.

You don't need to buy into the notion that climate change is a real threat. Even most conservatives would agree that we should not simply use or throw out as much as we want. Those who believe in "conservation" values would say our environmental foot print should matter. If we are using four times as much energy as grandma, and twice as much as dad, we should be concerned. I think most conservatives would agree with me there is a sense of personal responsibility required here and you can do most of that stuff pretty well without Government.

Look at what are the major job generators in a low carbon economy. You look at all the office buildings here in downtown Toronto, almost everything we are looking at, and I'm guessing there are millions of square feet of office space. They all have to be retro-fitted to a new insulation standard. We have to introduce geo-thermal energy. We have to retrofit the entire built environment consisting of billions of square feet of space. There will be a huge number of jobs needed to do this work.

What would it take to re-engineer the building and reinsulate it? How do you green buildings and how do you change the infrastructure to support them? Geo-thermal heat ups, better insulation, better blinds, better reflective technologies in windows to actually reduce the energy and GHG emissions. There would be some capital up-front cost, but it will reduce the cost of living and utility bills.

David Arkell: That's the challenge because you have these industries that have been around for years and have done quite well by it but now they're just dragging by their finger nails to keep things going.

Glen Murray: Look at what Tesla and what Fiat Chrysler have done, and what the Chinese have done in electric charging stations. I'm hoping that Petro Canada, Esso and Chevron all put electric charging stations in every one of their gas stations. We want them to be leading energy companies in the 21st century.

My dad was a very successful business man. He said, "Always remember the business that you're in. Don't get caught up on a product or a technology". I say now, "Are you an oil company or are you an energy company?" If you look at Shell or BP, those are companies that are doing some amazing stuff right now. And they're energy companies.

That's the question for the Canadian business community, how to look more opportunistically at the larger market. Can they see the challenges in their industry as huge opportunities, rather than being put off by them? Are they married to a technology and an old industrial carbon age technology? Or are they fully able to understand the logistics, have great manufacturing plants, have good innovation, research and design that give them an advantage to innovate and introduce the next generation of product? That's going to be a challenge because we see the companies that do that and those that don't. There is Kodak. Are you a "Kodak" company or are you a "Tesla" company?

