

## **Hindsight - The Key to Effective Foresight**

Remarks to the 100<sup>th</sup> Anniversary of the Canadian Club of Edmonton  
John R. McDougall – Edmonton – December 2006.

### **VG 1 – Hindsight - The Key to Effective Foresight**

Thank you for your kind introduction. It is indeed a pleasure to be back after almost a dozen years to speak to on the centenary of the Canadian Club of Edmonton.

I am pleased that two of my sons are able to be here today as well as my wife Irene. Jordan is a very active farrier in and around Edmonton while Michael is a supervisor at Fort Edmonton. My eldest son John is a photographer currently living and working in Kelowna. Since he cannot be here in person today, I used one of his images as the background for my title slide. My sons retain a perspective on the past and value the family lineage but what makes me much prouder is their passion and commitment to the future.

It is my observations based on their approach to life that I want to share with you today – I have titled my presentation “Hindsight, The Key to Effective Foresight”. My hypothesis is that the situation in Alberta today is, in many ways, similar to those we have faced in the past. So the past offers a way to think about the challenges we must address today to realize our hopes and aspirations for the future.

I have also blended in my experience with the Alberta Research Council to provide a technology overlay to my remarks. So in the next few minutes, you will get some history, a little philosophy, and a touch of technology all wrapped up into a package that I hope proves useful for your own foresight.

In about 30 minutes, using the history of Northern Alberta as a metaphor, I will describe some of the challenges we have faced, and offer up some ideas for creating a strong and sustainable future going forward.

## **VG 2 – family photos – JAM, JCM, JFM, JRM, JCM, JPM, MTM**

Before launching into my formal remarks, I want to note that my great-grandfather John Alexander McDougall was committed to Edmonton and was also a proud Canadian. He would be very satisfied to know that this club continues to be strong a century after its launch. He was a strong supporter during its formative years and his son John Charles and his son's son John Frederick (my father) continued with the tradition. Since I show only the direct male McDougall lineage here – I want you to know that the females of the McDougall family starting with my great grandmother and continuing through my mother and my three sisters have all been strong individuals in their own right and many were all active in the Women's Canadian Club as well.

I'd like to start with some thoughts from my son Mike – the youngest member of the McDougall family.

*The similarity of today to 100 years ago is uncanny. There was an enormous economic boom, a housing shortage, ambitious expansion of infrastructure and services. One hundred years ago, they had access to more products and services than ever before – oranges from Florida, pineapple from the Sandwich Islands and even a Chinese restaurant. Nationalism, globalism and corporate dominance were at their most overt. United Fruit was dictating policy to Central American governments and the term banana republic emerged.*

*The biggest difference today versus then is that last century's boom was a bubble. The railway connection fuelled the boom, worsened labour and housing shortages, drove up wages and encouraged people to come to find work, start businesses and build homes. Prices went up until they became untenable.*

*The mood then was also very similar to the mood now. Some were saying, "... the boom will never end".*

*But now we understand responsibilities – the UK under Thatcher helped that to occur and brought reality home. We've learned about consequences. We know the planet is one big closed system – economically and biologically.*

### **VG 3 – A Short History of Nearly Everything**

I have come to realize that economic, social, political and technological systems are all intertwined. Bill Bryson's book "A Short History of Nearly Everything" a couple of years ago is a great read on the technology part. As you can see here, technology allowed the world population to grow and hundreds of millions of people to prosper. In a way, we can (almost) play God. This chart shows the evolution of technology – energy, communications, computing and biology. It also shows Kondratief waves, paradigm shifts in the economic, social and political framework driven by fundamental technological changes based to a large degree on the dominant energy source. It can be helpful to think about this chart when exploring economic development.

According to the Canadian Geographic, what best symbolizes Canada is the vastness of the land. The Company of Adventurers Trading into Hudson's Bay was incorporated in 1667 and became lord of the west, an enormous portion of North America. The company also established the first infrastructure to exploit furs - the natural resource base as seen at that time.

### **VG 4 – Old Fort Garry, Assiniboine River, 1870**

Knowledge of the land was a natural result of the search for furs. The first serious exploration of north-west Canada began in 1785 when David Thompson traveled a large portion of the continent between Lake Superior and the Rockies. The Alberta oil sands earned a mention in some of the early trip reports. Over this same period, the industrial revolution was taking root in England.

Although the HBC discouraged settlement, the Selkirk settlers established the first independent settlement near Winnipeg in 1820. But the region in general remained largely unsettled. This picture shows Fort Garry as it was in 1870.

### **VG 5 – The Great Lone Land – Fort Edmonton about 1870**

Fort Edmonton was established in 1792. Over the years, the location moved a half a dozen times, finally coming to rest just below the site of the Alberta Legislature as shown in this painting from about 1870. In 1871, the four year old Dominion of Canada purchased Rupertsland from the HBC to open up the west to settlement.

To our family, the story of Edmonton and Alberta begins with Colonel Butler and his 1872 book “The Great Lone Land”. That book convinced my great grandfather, then a teenager living in Ontario caring for his widowed mother, to look to the west for his future. This was also the time when policy, technology and economic development began to come together and make it possible to transform the Canadian Northwest from hinterland into civilization.

Nineteen year old John A McDougall saw opportunity and took the plunge – traveling overland to Winnipeg in 1873 via the old Dawson Trail through what is now Northern Ontario. He scraped and traded to get by and, notably, upgraded his education. He had dropped out of school at the age of 12 when his father died. In the spring of 1874, he invested \$200 to become a partner in a store. By fall, the partners had completely sold out of goods. John A decided it was time to get out of “the big city” and headed west.

According to John A McDougall, “(In 1875) *Outside of the few HBCoy trading posts there was no sign of settlement or civilization to be seen in all the west outside Manitoba and very little then after leaving Portage La Prairie. There was no sound to break the stillness that reigned all around except the creaking of the carts as we slowly moved along. One might travel far and not meet a living soul. The solitude oftentimes became oppressive and seemed to permeate ones whole being. On such occasions ones thoughts many times naturally dwelt on the great possibilities of the country and one tried to picture in the minds eye the future that awaited it.*”

## **VG 6 – Edmonton about 1876**

He was present at Fort Carlton for the signing of Treaty 6 in August 1876 and subsequently made his first visit to Edmonton (shown here circa 1876) and Morley in the Calgary region. A letter to his sweetheart Lovisa later that year described the life of an independent trader in an apparently empty land. But it also showed a fondness for the country and the indigenous people.

*Dear Lovisa,*

*It is a funny life I lead. I do my own trading with the Indians, going once or twice a week to sell goods and bring back furs. The way they use dogs here is to hitch up four, one ahead of another, to a flat sleigh about 12 feet long and a foot wide. On this I strap my load and away I go, running beside it all the way, through woods, over hills, down and up deep ravines, across creeks and lakes until I reach the*

*Indian camps. I can speak Cree pretty well now, so I get on with them splendidly. Sometimes I don't reach the Indians the first night, and have to camp out in the woods all alone. I cut dry wood to make a fire, scrape the snow away and get some willows to spread on the ground for my bed. Then I melt snow to make some tea and have my supper. After that, I sit by the fire and think of you, and home. It is very lonesome. Everything is so still, except the occasional howl of a wolf or a lynx, or the cry of some night bird.*

In the 1870's, buffalo underpinned the fur trade economy. The economy was based on the land and what it would support – what we describe today as sustainability. Natural resource extraction, intensive agriculture and urbanization would all come later.

John A over-wintered in Victoria with the (unrelated) Methodist missionary McDougall's returning (broke) to Winnipeg in 1877 and then going back to Cannington, Ontario where he married Lovisa in the spring of 1878. Their partnership would last for 50 years until John A's death in 1928. The newlyweds, both only 24 years of age, traveled to Winnipeg later in 1878 and left for Edmonton on May 5, 1879 with 11 carts, \$4,000 in trade goods and 3 boys to drive the oxen. They traveled by boat to Portage la Prairie, overland to Saskatchewan, Battleford, Fort Pitt, Frog Lake and Victoria and finally reached Edmonton in early August. Before leaving Cannington, Lovisa had all her teeth pulled. She would have no blacksmith for a dentist and wore the same dentures for 64 years until she died in 1943.

### **VG 7 – McDougall Home and Store, Edmonton 1879**

John A had first reached Edmonton in 1877 at the age of 23 and it was here that he and Lovisa set out to forge their future. What would prompt such a decision? Edmonton at that time was the HBC fort and a small settlement of roughly 40 people scraping a living from the surrounding area. According to my great-grandfather, *“In those days, Edmonton was on account of its geographical location the most important post owned by the Hudson Bay Coy and the only place of any importance between Winnipeg and the Rocky Mountains. It was on the original surveyed line of the C.P.R. Edmonton was the 'Mecca' of the west – to quote Col. Butler's report to the government - lying as it were silently awaiting the approach of the immense wave of human life which rolls unceasingly from Europe to America destined to reach those beautiful solitudes and to convert the wild luxuriant of their now useless vegetation into all the requirements of civilized existence.* The prospects for Edmonton seemed so bright and full of promise (to John and Lovisa) that “we

*were quite content to make Edmonton our home.*” John A McDougall & Co’y, the forerunner to McDougall & Secord, Limited was established in 1879 and continues to this day, I believe as the oldest continuously operating business venture in Alberta other than the HBC.

Lovisa returned to Cannington in 1880 for the birth of their first daughter Alice – returning to Edmonton with the newborn in a Red River Cart the next spring. Along the way, Alice fell off the cart but was not missed for some time. Retracing the path, they found the young baby in a mud puddle. Alice passed away in 1962.

### **VG 8 – Edmonton 1886 Fair and pictures of produce**

The Agricultural Society organized in 1879 always exhibited splendid samples of grains and vegetables. In the 1886 exhibition, cabbages girthed 4 feet 1 inch, turnips 2 feet 4 inches weighing 23 pounds, potatoes 1 foot by 1 foot 8 inches, onions 1 foot 2 inches, perfectly ripe pumpkins 4 feet 1 inch, squash 4 feet 3 inches and parsnips 3 feet 7 inches in length. These vegetables were all produced without any special effort or skill in the line of fancy gardening.

Drought, early frosts, and wet fields made the 1880's disappointing years for prairie farmers. One of the bright spots was Phillip Ottewell's yields of barley - 60 bushels; wheat - 41 bushels, and a world record of 114 bushels of oats per acre<sup>1</sup> - without automation – impressive, even by today’s standards.

### **VG 9 – Global Economic Value Proposition**

Although the region was rural, the world was globalizing – mainly to access resources and development followed. Market access was based on low cost resources and later on British Empire preferential tariffs. Today we have evolved to freer trade and specialization. This chart shows how economies evolve in response to their own specific situations. Western Canada evolved from simply producing its resources to become an agri-food resource processor. We sat in that position for a long time until the discovery of oil at Leduc propelled Alberta into the industrial age with refining and petrochemicals and manufacturing. At that time, Alberta and Saskatchewan were predominantly based on agricultural exports and nearly equal in both population and GDP. What a difference 50 years have made.

Today Alberta is a global energy producer. Our major issues are an overheated energy sector, environmental challenges that come with intensive resource production

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<sup>1</sup> Fort Edmonton Park 1885 Manual

and urbanization and the difficulty of intelligently investing growing provincial wealth.

Before we get too smug about ourselves, let's remember that Alberta's current agenda is to diversify by focusing on increased value-added activities. That's great, so far as it goes, but positioning as a global leader requires more than that – we must become innovators (not just inventors) who are effective and efficient in putting new ideas to work commercially. And we must deal more effectively with the impacts of development.

### **VG 10 – Edmonton 1885**

Embryonic Edmonton community grew into a village, then a town. But growth was slow, disappointing and discouraging for many years. The first great disappointment was the political decision to route the CPR 200 miles south of Edmonton. Many considered this a knock out blow for Edmonton. It certainly retarded the growth of the town and also kept back settlement of the lands to the east for many years. But the population hung in. Although badly hit, they were not discouraged and did not go south to the railway.

The 1885 rebellion cast a gloom and spread terror all over the district including the little town. Many fled to the Fort or to the Catholic Mission at St. Albert for protection. This year also saw the completion of the CPR uniting the west with the east through Calgary.

Edmonton grew slowly but steadily. By 1889, the town had 6 large mercantile establishments stocking everything from sides of bacon to ostrich plumes; drug store, hardware, furniture and jewelry stores; 4 churches; 2 schools; 4 hotels; a telegraph office and telephone service; a post office with mail every 5 days and The Bulletin newspaper.

With the CPR, Calgary became a formidable rival as it was so easy to get there while Edmonton was 200 miles north of the railway and it took 5 days steady driving from Calgary to get here. Edmonton's 500 citizens realized they must do something or they could never hope to make much progress so they organized the first Board of Trade west of Winnipeg with John A McDougall as its first president. The Board of Trade encouraged and promoted settlement by collecting and publishing reliable information from businessmen and resident farmers regarding the Edmonton district. They also induced delegates to Calgary – who came to inspect the country – to see the Edmonton District by paying their expenses to Edmonton and back.

## **VG 11 – Pamphlet**

The western provinces abounded in great possibilities but in John A's view, none of them equaled Alberta with its vast agricultural resources, its timber lands, its lakes teeming with fish, its enormous and valuable coal deposits (they being four fifths of that of the whole Dominion) and other latent but yet undeveloped wealth.

The Board of Trade also induced farmers to come and locate on vacant lands. The business people realized that the settlement of the country by a good class of industrious farmers would do more than anything else to build up the town. There was no demand for lots in town in those days and they were of little value.

The northern Alberta economy was based on its resources and access to global markets. The original fur-based economy that had brought John A to Edmonton was on its way down while agriculture was on the way up. Edmonton was a community with an eye to the future. Its leaders could see these changes coming and knew how to market so market they did.

In 1890 the Board of Trade and the Edmonton Agricultural Society published a small pamphlet. It contained a note to immigrants and articles on where farming paid best, where returns were most certain, where the soil was most fertile, where the climate was most healthful, where land could be easily secured and why there was no railway. It described artificial conditions, natural conditions and social conditions. It told of the Edmonton district, its farm products, stock, game, fish, timber, minerals, scenery, settlement, trade prospects, the means of communication, railway prospects, why to locate now and who should come. It wound up with a short sketch of 15 or 20 of the best farmers, who they were, where they came from, when they settled here, what they had when they came and what they had now.

On July 8 1890, construction of the Calgary and Edmonton railway commenced. Completed in the fall of 1891, it stopped on the south side where Strathcona began to grow. This threatened Edmonton's existence since it seemed impossible to get the railway to come over the river. A town off the railway cannot make much progress or successfully compete with a rival at the terminus of the railroad. There seemed every reason and inducement for Edmonton to pull up stakes and move over to the new town and the railway. But again they said no. They still believed there was a future for Edmonton and the day would come when the railroad would come to Edmonton.

About this time, the Dominion Government sanctioned a move of the Land Office from Edmonton to the South Side. This was only prevented by the heroic vigilante actions of the citizens headed by Mayor Matthew McCauley.

## **VG 12 – Klondyke Gold Rush**

The Klondyke gold rush set in during the fall of 1897 while John A McDougall was serving as Mayor of Edmonton town. He and McDougall & Secord played an active role in generating publicity for the Edmonton area. Hundreds of sourdoughs took the Edmonton route and brought the town prominently into the public eye. This was followed by a rush of settlers into the region.

Once again, I quote from John A McDougall. *“With knowledge born of intuition we could not help but feel that we were mere actors, though humble ones, in a great national drama - the birth of a new and greater Dominion. At the same time we were conscious that we were witnessing the dawn of a new era for Canada and that the pioneers who were coming into this new land were the standard bearers of a mighty host from eastern Canada and other lands that were sure to follow after the way had been opened up and the country’s worth had been made known to the outside world.”*

Today’s black gold rush is creating a similar influx with similar opportunities for Edmonton. I am pleased to see Mayor Mandel’s efforts to ensure Edmonton gains its share of the benefits from this development.

## **VG 13 – Low Level Bridge**

Edmonton town council and the Board of Trade for years had urged the Dominion Government to build a bridge across the river in order to do away with the old fashioned ferry crossing and make it easier to get back and forth from the railway station on the South Side. Finally the government wired stating that if the town would contribute \$25,000 towards the cost of a bridge they would build one. The population then was only about 1500 – and \$25,000 was a large sum.

A group of civic leaders raised the money on a joint note through the Imperial Bank the same day the federal wire was received. The ratepayers afterwards endorsed the action and assumed the liability. The bridge provided a way for the railway to cross the river – The Edmonton Yukon and Pacific did just that winding down Mill Creek, across the Low Level Bridge and up the hill behind Victoria golf course to bring Edmonton its first rail connection. The Low Level Bridge serves the city to this day.

Finally, after waiting for twenty-six years (by which time the population increased to 10,000), Edmonton secured direct railway connection with the east through the Canadian Northern Railway on November 24, 1905. This great event for Edmonton was subsequently followed by the Grand Trunk Pacific and at last the CPR came to Edmonton across the new High Level Bridge 25 years after it had reached Calgary

Looking back from our times, their depth of community commitment was amazing. I can't imagine these early Edmontonians allowing an issue to divide the community the way the airport debate divided Edmonton for more than 30 years. They would just have fixed it and moved on.

### **VG 14 – McDougall Mansion and Commercial Development**

Edmonton benefited greatly from early settlement and as the business people had expected, they did too. My great grandfather was one of the beneficiaries. He built a mansion at the top of the 103 street hill. McDougall & Secord sold the fur business at the turn of the century to Revillon and Freres and became a major investor in Edmonton's commercial development financing much of Edmonton's commercial development for the next 25 years.

### **VG 15 – Empire Building**

John A died in 1928, the depression followed in 1929 and the City went into a sort of suspended animation. McDougall & Secord stuck with Edmonton but gradually reduced its dominant position. In the 1950's, the company constructed a substantial addition to Commercial Chambers, the two story office and retail building on Jasper Avenue where Commerce Place stands today. Then, in 1963, the company opened the New 11 story Empire Building replacing the brick structure built in 1905. This modern structure kicked off Edmonton's downtown renewal.

### **VG 16 – McDougall for Mayor**

Winston Churchill once said, "*We make a living by what we get, but we make a life by what we give.*" Self-reliance, volunteerism and community service were key traits of early Edmontonians – attitudes that sharply contrast the greed, shallowness and self-interest that dominate world media today. Social and community service are fundamental elements of strong communities and I think Edmonton is fortunate that these are the kind of traits still common here today.

Edmonton's most rapid growth came in the early 1900's. That growth came with a price just as it does today. Enormous numbers were forced to live in tents as population outstripped housing and infrastructure. By 1907, Edmonton was suffering badly and needed a strong leader. The street railway was behind schedule, the telephone system was in trouble and the city was in debt. John A McDougall was more or less drafted and became Mayor for a second time in December 1907.

### **VG 17 – A Token of Appreciation**

Twelve months later, as his term ended, in appreciation of his accomplishments, Edmonton's citizens presented John A with this sterling silver casket adorned with North Saskatchewan River gold and crafted right here in Edmonton by Jackson Brothers. Cards signed by a multitude of individual contributors are inside. Reporting on the event, The Edmonton Bulletin reported:

*“The end of Mr. McDougall's term of office, in some respects, marks the end of a distinct epoch in the history of the city. His tenure of the Mayor's chair has seen the culmination of policies whose foundations were laid with the wisdom and foresight of his predecessors, and for which those who presided over the destinies of the city in former years have manfully striven. Entreprises have been brought to a successful issue, plans of action have come to fruition. The street railway system is an accomplished fact, the new power plant is in operation, street paving has been completed on a comprehensive scale, the septic tank is ready for operation; many more important projects have now come to fulfilment.”*

### **VG 18 – Edmonton circa 1920**

These accolades were well warranted I believe, but to me, John A's own remarks at the presentation dinner reflect the reasons he could help Edmonton be successful.

*“There are many things to do in a rapidly growing city, and the work will tax the time and the ability of your mayor and council for many years to come. One great factor that has done much to push Edmonton into the forefront has been the united action of the people all working together for the common good. We have done away with all sectional lines, and we have no religious or race differences. Our population is increasing rapidly, and we welcome all who prove themselves to be good citizens. We have a magnificent country for hundreds of miles in every direction with Edmonton as the centre. Our agricultural lands are the richest in the world, whilst our natural resources are store-houses of untold wealth, the*

*value of which we have not yet begun to realize. This is a great country and Edmonton is destined to be a great city.”*

I could tell similar stories of my grandfather John Charles and my father John Frederick – both of whom continued the tradition – blending community service with business acumen. But instead, I will jump ahead quickly.

After my great-grandfather’s death, growth continued for a few months until depression and war stalled the city for nearly three decades. The Leduc oil discovery helped launch a new phase and development moved forward steadily through the 1950’s to 1980. Many of the opportunities such as oil sands, manufacturing and forestry that could only have been dreams to the early settlers came to fruition.

## **VG 19 – Edmonton Skyline 2005**

One hundred years after John A settled in Edmonton, the city looked much as it does today. With the NEP and fall in energy prices in the early 1980's, Edmonton went dormant again until the late 1990's. In 1990's, McDougall & Secord moved out of commercial real estate rentals and operations and sold the Empire Building in 1998. We do however continue in land development.

I hope this historical synopsis was interesting to you, but before I close, I would like to share a few thoughts about the future prospects for Alberta.

I became CEO of the Alberta Research Council in 1997. It is something that I greatly enjoy because it challenges me to think every day about things that are at the core of society and its long term well-being.

- The future sustainability of Alberta and Canada is tightly linked to the ability of its companies to develop and deploy technology. Technology helps companies remain globally competitive. It mitigates the environmental and social impacts of industrial development. It enables companies to grow, to generate exports and to provide well-paying meaningful jobs. And this generates the wealth that supports a high quality of life.
- The ARC is Canada's oldest, largest and most successful research and technology organization (RTO) and plays a unique role in Alberta's innovation system. We focus on being the best in Canada in developing and demonstrating leading edge technology for deployment through companies and other organizations. We do this in the public interest by effectively combining a businesslike approach with our social and environmental agenda.

This sounds a whole like the mantra our family has been trying to follow from its first days in Edmonton. It is pretty clear that the amazing natural resources that attracted my great grandfather to Alberta and the fundamental attitude he and others brought to Edmonton have sustained us for many decades. But it is also true that as global populations rise and demands for our resources grow, there is also a price to pay for prosperity.

Short-term benefits from resource development often overwhelm the ability to create long-term sustainability. Perhaps that is why, almost without exception, resource based economies have historically never weaned themselves from dependence on resources.

## VG 20 – An Alberta Scenario for 2050

With the perspective of the past and our knowledge of the present, let's look ahead forty years and consider some of the issues and challenges we must address now to create the kind of community and province I think we all want our grandchildren and great-grandchildren to enjoy. I have to tell you that it is much easier to think ahead in hard times than in good times. So please recognize that I am reaching pretty hard, especially when the pace of change seems ever more rapid.

Just consider, what my great-grandfather lived through (I quote). *“Great changes have taken place since those early days. In scientific and mechanical inventions we now have in daily and common use and could hardly imagine how people could get along without them, the telephone, the phonograph, the steam plough, linotype machines, automobiles, the Kodak, X-rays, moving pictures, wireless telegraphy, airships, aeroplanes, typewriters, the electric streetcars, and the electric light which has since then come into general use.”*

For me it has been the atomic age, computers, satellites, landing on the moon, GPS, genetics, flying faster than sound, organ transplants, the PC and cell phones.

What then lies ahead for us? With computers, the unraveling of the genome and DNA and with the ability to manipulate materials at a molecular level, we can only dream about the possibilities. However, with the benefit of hindsight and some hard thinking, one can envisage the nature of Alberta 40 years from now.

- It is clear that Alberta's coal, oil sand and bio-resources are enormous by any standard. The EUB estimates Alberta oil sands production will reach or exceed 9 m bpd by 2047. That is nine times more than we produce today. At today's prices, this will generate revenues of roughly \$500 million per day. The current oil pipeline system will need to quadruple its capacity. GHG production, measured as carbon equivalent, will be about 500,000 tonnes per day without upgrading or about 1 million tonnes per day with upgrading. This is equivalent to 50% of Canada's total current GHG emissions. Cumulative water demands, unless controlled, could be equal to half the low flow volumes of the Athabasca River. Direct employment will be around 150,000 and total employment around 600,000.
- What will happen in other sectors – agriculture, forestry, manufacturing, high tech? Without carefully designed public policy, I suspect they will be struggling except for those that directly support the oil sands sector.

- What will happen to the rest of the province? Provincial population could easily increase by 50% to around 5 million. The Calgary Edmonton corridor will see the sharpest increases. We will need to house nearly 2 million more people. Waste water and solid waste production will more than double.
- Demand for electric power will probably triple. Nuclear reactors will probably be built to tap the vast uranium deposits of Northern Saskatchewan.
- Basic services will be stressed – south of Red Deer, water is already fully allocated. Surface and air transport capacity will need to double. Primary, secondary and post secondary education must expand substantially.
- Demographic changes and income disparities may become troublesome. High levels of immigration will continue to drive social and cultural change. High incomes and migrant labour may increase crime and violence.

Such challenges can easily become overwhelming but I think they represent an amazing opportunity. As a strategic instrument for Albertans, the Alberta Research Council has an important role to play in enabling economic development to occur while ensuring that we have the technology to make it happen in ways that benefit Albertans.

Alberta has the chance to create a new model for the world – a sustainable energy superpower with a high quality of life made up of people united in action and working together for the common good.

So before I close, I would like to share just a few of the exciting technology pathways ARC is working on today that offer the potential for just that kind of future world.

### **VG 21 – Agriplex**

The first is what we call Agriplex. This concept is based on integrating technology and the agricultural land base in new ways to create sustainable communities and regions throughout our province, not just in the major urban centres. Traditionally, farmers produce crops and livestock. But, what if we used those outputs to produce fuel, soil nutrients and other value added products? What if we developed new forms of farmer cooperatives that blended all these activities together? A land radius of 25 to 30 km would support such an operation.

### **VG 22 – Zero Emission City**

In our urban areas, why not create zero emission cities? Edmonton has moved a long way down this path with its composter. But what if we went all the way producing renewable natural gas from sewage sludge, garbage and other materials; generating fertilizer and other products from the remainder and re-using municipal waste water for industrial processes?

### **VG 23 – Integrated CO2 Bio**

For hydrocarbon thermal energy production why not change the paradigm completely and look at CO2 as a massive new natural resource instead of a problem. The world we know today emerged from a CO2 rich atmosphere a couple of billion years ago because algae converted the CO2 to biomass and oxygen. Why not use that approach to convert our CO2 emissions into valuable products such as hydrogen, methane gas, bio-fuels and other products?

### **VG 24 – Fibre Refinery**

- In recent decades, agriculture and forestry have harvested plants, extracted what they considered to be valuable products and threw away the rest. What if we thought of crops and trees holistically? What if we processed the entire plant? That is the essence of a bio-refinery. As bio-commodity prices fall, hydrocarbon energy prices rise and GHG issues become more important, the concept of bio-refining is (again) coming of age.

### **VG 25 – Concluding Comment**

People such as you in the Canadian Club can help to make this vision real. Happy birthday and congratulations on this, your 100<sup>th</sup> birthday – from the past and from me and the McDougall family today. And - best wishes on a strong future and continuing contribution to Edmonton as we look forward to truly outstanding future opportunities.

I can think of no better way to close than with John A's words from almost 100 years ago, *“Of Edmonton, the centre of such a province, the gateway to the Peace River Country and that of the great north land stretching to the arctic Ocean and from which so much may reasonably be expected, no one doubts ... or predicts ... anything but a great future for our city.”*