BioProduct Value Chains: Emerging Opportunities and Challenges

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BioProduct Value Chains:
Emerging Opportunities and Challenges

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# Table of Contents

**Introduction** .............................................................................................................................................. 4

**Session One – The Big Picture:**
Mr. John Oliver ............................................................................................................................................. 9
  Maple Leaf BioConcepts

Mr. Owen McAuley .......................................................................................................................................... 35
  Canadian Agrifood Policy Institute

**Luncheon Keynote Speaker**
Minister Stan Struthers .............................................................................................................................. 61
  Minister of Conservation, Province of Manitoba

**Session Two – What’s Happening Now**
Mr. Henry Nelson .......................................................................................................................................... 76
  Manitoba Agriculture, Food, and Rural Initiatives

Mr. Allen Tyrchniewicz ................................................................................................................................. 87
  Tyrchniewicz Consulting

Mr. Peter Watts ............................................................................................................................................... 97
  Pulse Crop Canada

**Session Three – Implications for Transportation and Logistics**
Dr. Barry Prentice .......................................................................................................................................... 119
  I.H. Asper School of Business

Ms. Sally Rutherford ...................................................................................................................................... 138
  Monachus Consulting Ltd.
Speaker Biographies........................................................................................................150

Participants List.............................................................................................................155

Sponsors............................................................................................................................158
11th Annual Fields on Wheels Conference

*BioProduct Value Chains: Emerging Opportunities and Challenges*

Dr. Ed Tyrchniewicz, Associate Dean  
I.H. Asper School of Business  
Morning Chairperson

On behalf of the Transport Institute, and the Asper School of Business, I want to welcome you to this 11th in an ongoing series of events called Fields on Wheels. I want to particularly acknowledge Dr. Barry Prentice who is the godfather of the concept of Fields on Wheels where we get industry, government, and academia together to talk about current issues relating to grain transportation policy, grain transportation operations, and a variety of other related matters. This year we are taking perhaps a little different perspective on Fields on Wheels. If it does not work, I am totally responsible. So, others would say, I am totally irresponsible, but that may be true too. As is always the case, we have a number of organizations that have helped sponsor this event. Among these: the continental breakfast sponsor is the Transport Institute; the morning coffee break sponsor is Aikens, MacAulay & Thorvaldson; the lunch sponsor is Agricore United; the general conference sponsors are Manitoba Infrastructure and Transportation, Canadian Wheat Board, Canadian Pacific Railway, I.H. Asper School of Business; and Sponsors in Kind were the Vancouver Port Authority, the Hotel Fort Garry, and WESTAC. Please join me in thanking our sponsors.

You have a program before you which is shifting. We are getting into a topic which, perhaps, not that many people are closely familiar with. It is a good
opportunity to gain some of that perspective. What we are going to do this morning is: I am going to give a brief overview of what we mean by this thing called BioProduct Value Chains. Then, we are going to have a presentation from Mr. John Oliver on a bio-product-based vision for Canadian agriculture. John may speak longer and then Owen may speak longer from a producer’s perspective. And what a producer we have got in Owen McAuley to talk about this. Then we will get a Manitoba perspective at lunch time from Minister Struthers—Stan Struthers—and that has been interesting, watching as Manitoba has moved into the bioproducts area. This afternoon, we will do a couple of case studies or case examples: one on ethanol and another one on pulses. And, we thought, you cannot just lump bio-fuels together. We are going to add a third one on bio-diesel. This is an area that Manitoba has been particularly involved in and Henry Nelson has very graciously volunteered to give that particular perspective to the group this afternoon. And, what could a Fields on Wheels be without Barry Prentice having something to say? Barry will be talking to us this afternoon about the transportation and logistics implications of the bioproduct-based set of value chains.

For our wrap-up speaker, we have Ms. Sally Rutherford who is known to many people. She may not necessarily be known to all of you, but she...if Barry is the godfather of Fields on Wheels, I would say Sally is, to a certain extent, the godmother—perhaps more so in the Italian sense than the Catholic sense—of a lot of the work that’s happening on bio-products in Canada. Now I’ll tell you more about her later on. I think we have a very good program and let me just take a couple of minutes to put some context into what we’ll be talking about.
Session 1

The Big Picture

Dr. Ed Tyrchniewicz
Associate Dean,
I.H. Asper School of Business

Alright, what do we mean by BioProduct Value Chains? Well, it can mean whatever you want it to mean. But in the broadest sense, when we are talking about a BioProduct Value Chain, we are talking about one that is based on renewable bio-resources. For example, agriculture and trees can be used to not only produce food, but can produce fuels, health products, chemicals, plastics, and other industrial products.

Why the interest in BioProduct Value Chains? There is a considerable interest in BioProduct Value Chains in Canada, indeed, throughout the world. Basically, we can come up with many reasons, but I think there are four that I would say are driving this interest. The first being, providing alternative opportunities for rural economic growth and diversification. To put it more bluntly and crassly, grain farmers are having a hell of a time trying to make a living and we have got to come up with something, with due apologies to the Wheat Board. We have got to come up with something to do besides export grain on the prairies. I think bioproducts provide a very interesting opportunity. In some cases, a niche opportunity but, none-the-less, an opportunity. I think Owen will talk a lot more to this.

The concern about reducing greenhouse gas emissions has been a policy-driver and perhaps, right at the present time, we are not exactly sure which way the
policy is driving. But, I think the issue of reducing greenhouse gas emissions is with us and bioproducts are seen as one way of helping to do this; developing products and processes that are less dependent on fossil fuels. That is perhaps not as strong a driver as it is in the U.S, which is particularly dependent on imported fossil fuels. But, I think, as Allen will talk about this afternoon a little bit, this is really one of the drivers behind why we would be interested in bioproducts.

A fourth reason is developing products that will improve the health of Canadians. I suppose this is one of the reasons why I was particularly interested that we use this forum to talk about bioproducts. I think, too often when we talk about agriculture, we talk about all the problems of agriculture, the income problems and agriculture as the bad guys. Well, I think one could take a little different vision of agriculture—that being, a solution to what some of society’s problems are. Allen and I had done some work for the Canadian Agrifood Policy Institute and came up with a bumper-sticker vision for Canadian agriculture. Namely, that agriculture is the foundation for a healthy and sustainable society. And that encompasses a lot of things. A real number one issue in the country is not agriculture; it is our well-being, our health and the amount of money we are spending on health. I think this is where our first speaker is going to—wax eloquent is perhaps an understatement, John? The whole notion of what society wants from agriculture—besides cheap food. They want a sustainable landscape, and one concerned about the environment, about water quality, land use, etc. I think bioproducts have an opportunity to play an important role in that.

So, why at Fields on Wheels? Well, I have commented on that a little bit…but, as I have said before, traditionally Fields on Wheels has looked at the current
transportation policy and operational issues relating to grain. This has been a very important event in the past to bring practitioners, policy people, and academics together to explore some of these issues. The notion of exploring an issue like BioProduct Value Chains, an integral part of which is transportation and logistics. We thought it was a good opportunity to do some of that kind of talking; some of that kind of exploration of what are some of the opportunities.

What are some of the challenges for BioProduct Value Chains? I suppose, maybe it is not just because I am in the business school now, but, I think a bottom line on a lot of this is that, for these BioProduct Value Chains to operate effectively, business leaders and policy makers need to understand where the value is being created and how that value can be captured. I think that is really what we are going to try and do today. To get some ideas as to where the value from BioProduct Value Chains can be derived, and how we’re going to capture that so that the value chain benefits not just one link in the value chain.

With that, I would like to introduce our first speaker this morning, John Oliver. You have the formal biography in your registration package and I am not going to read that. I can say many things about John Oliver. He is currently president of Maple Leaf BioConcepts, a consulting firm in biotechnology and bio-economy strategies. He’s also past president of Dow Ilanco Canada, a joint venture between Dow Chemical and Eli Lilly, to research, manufacture, and market crop protection and biotechnology products. I have known John for quite a while. When I was Dean of Agriculture and Forestry at the University of Alberta and he was at Dow, we had a number of discussions. But, more recently we were working on the “vision paper” for Canadian Agriculture. That is when I really had some terrific conversations with John about his vision for agriculture and
how it could be, would be a bio-based or more of a knowledge-based industry. And with all the things that John does, there are probably a number of ways to describe him. But the term “energizer bunny” comes to mind. With that, I would like to invite John to come and tell us something.

Mr. John Oliver  
President  
Maple Leaf BioConcepts

Good Morning, ladies and gentlemen. It is great to be here in Manitoba back in Winnipeg, and I was thinking this morning that the last time I spoke in this room was September of 1976. So, it has got some fond memories for me. We had a convention at that time to deal with intellectual property. That is at the time that a white paper was out saying that we should have been in patents in Canada and that all patents should be accessible to anyone. There was a big discussion, as you can appreciate, with the technology industries; a big push-back on that. I am going to talk this morning about a vision for agriculture and the bio-economy. But, before I get started, I want you to go back into your memory banks. I am going to give you a quote, and I want you to think, who gave this quote, and when? Here is the quote: “The use of vegetable oils for engine fuels may seem insignificant today, but such oils may become, in the course of time, as significant as petroleum and coal tar products of today.” Does anybody know who gave that quote? Rudolf Diesel, the father of the diesel engine, made that quote in 1912—94 years ago. That is what I call ‘visionary’. Well, I am going to talk about vision, about agriculture and the bio-economy, or, another title I could put on it is, lining up for a moon shot. Because I believe we need a moon shot in agriculture.
I think it is really fortuitous that we are here this morning to talk about the bio-economy because the bio-economy is going to be the new economic development driver of the next three decades in the western world. It is also going to be the catalyst to launch agriculture into an industrial revolution. We are starting to see it happen with bio-energy in agriculture. Bio-energy is the start and it is a very significant start to a new adventure for agriculture—a new journey that we’re going on. But, I think the real advantage is not the dollars and cents that we are going to get out of this new bio-economy—out of this new bio-energy phenomenon that is coming at us like a tidal wave. It is the fact that we are finally going to have an agriculture, a magnet, that is strong enough to attract the best and the brightest of our young people. That is where the value of the bio-economy is going to be. It is when that young person, whether it is your son and daughter or your neighbors son and daughter or your grandchild, says, “I want my career in agriculture. And I want my career in agriculture because it is going to be at the leading edge of the greatest industry, of the greatest technology this world has ever known.”

Now, at the outset, and Ed put it up to talk about the bio-economy, let us get an interpretation that we can work with. When I talk about the bio-economy, I talk about producing products, man-made, using biology. This is a knowledge-intensive industry. The real label is: knowledge-intensive bio-economy. Molecular biology is going to be the dominating science as we go forward. It is interesting to think about molecular biology as the dominating science because, where do you find molecular biology? You find it associated with medical schools. But, molecular biology is going to be the dominating science. The product range is going to range all the way from industrial products, industrial feed stocks, to human and animal health products. I like that broad
interpretation because it is anything man-made, using biology. Now, I heard a simpler and more to-the-point interpretation, a couple of weeks ago at a conference in Michigan, which I thought was pretty good. The speaker there said the bio-economy is that intersection in the road where life sciences meets chemical engineering. I thought that was a pretty good interpretation, but I like the broad-based one because I believe, from that, we are going to get the major industrial product breakthroughs. My hope today is that I can get you thinking about the future and thinking about the opportunities that are out there. Thinking about this knowledge-intensive bio-economy which is going to be the dominating economic driver of the next three decades in the western world.

Now, Ed mentioned this and I would like to reinforce it. Over the last few years, agriculture has been through some really rough times. Much of our agricultural production goes to trade and export. This is a tough, competitive industry and it has been very hard to be very successful in it with constantly lower prices, constantly new competition. It is also very tough in agriculture, to get people lined-up on the same page, thinking the same way. I believe that it is important, if we’re going to start to build a vision of the future. What I would like to do this morning is to build it off of the four things that I think we can agree on in agriculture. I think there are only four. Then, build it off of the assumptions of the future. The things we are going to be faced with in the future. And finally, bring it down to a vision. But, I believe it is important that all of us sing from the same starting page in the book, from the same hymn-book.

Now, just for a minute, think, if you were Minister of Agriculture Strahl, and you were coming out here to Manitoba today to meet with farm groups, here is what you would meet. You know what you would run into. You and I both know.
You would have fifteen people from agriculture representing fifteen different groups, all with a burning issue that they want the Minister to solve by 5 o’clock this afternoon. I have been in this industry for over forty years, and I do not know how many meetings I have been to in the course of that time. But I can assure you that I have been to consultation after consultation, flip-chart after flip-chart on the wall, speech after speech. And I have come to believe that if we could get agriculture to agree on three or four things, we could build off of that. So, let me give you the four things that we can build off of and then I want to talk about what John Kennedy said in 1961—“we’re going to the moon”. I want to talk about us going to the moon in agriculture.

Well, there are, four basic points we can agree on. This is the foundation. And this is distilled down after, as I said, a forty-plus year career in this business.

The **first point** is, the status quo is not sustainable. I think all of us will agree that the status quo for today’s agriculture, as we lurch from crisis to crisis in a reactive mode, is not a sustainable, solid way to build a future.

The **second is**, globalization is real, in every shape and form. We are in a world where borders are being erased, competition is fierce, new competitors are coming on daily, and traditional places where we were able to sell Canadian commodities with certain confidence in the future that the market would be, are no longer there. Loyalty to products and trading patterns has broken down. We are truly living in a global village. We are just a small component of that global village.

**Third point is**, people invest for opportunity. And I think we forget that in agriculture. People invest for opportunity. None of us invest in the stock market
for stocks to stay where they are, or go down, and have us continually keep on reaching into our pocket and funding those stocks. People invest for opportunity. We have got to provide an opportunity in agriculture for people to invest. No person would invest in agriculture today with today’s set of rules and today’s outlook if they did not think there was an opportunity. That future opportunity is the bio-economy. That is the attractive future opportunity for investment.

The fourth point is, that the situation on the farm today is a real crisis. It is a real cost/price squeeze/crunch that is taking farmers off the land and losing their farms, in some cases. It is real, and we have got to deal with it.

The future opportunity of the bio-economy is real. So, we have got to attack this point with different people, different strategies. We have got to attack the current crisis. We have got to look to the future opportunity, and we have got to keep the production plant intact because the foundation of the bio-economy is going to be the foundation of our good farming and good farmlands in Canada. Now, back about two or three years ago, a Professor at Harvard University wrote a book. As the Future Catches You was the name of this book. He looked at all the technology that had been assimilated by society over the last fifty years. He talked about what he thought the big breakthroughs would be in the next fifty years. Then, he made one summary comment. And that summary comment was that the only things that matters are the trends, because all the other numbers on the page would change by the end of next week. So, as we look at our base of four points that we could agree on, let us look at the five trends that are going to drive this period of agriculture between now and 2020/2025, maybe even up to 2030.
There are five dominant trends that we, in agriculture, are going to face, whether we are in Canada or any place else in the world. But we are going to face them in society. What I am going to do is list the five trends, and then I am going to speak about each with a few comments. I do want to talk about the future.

- The first one is the dominance of health in the every day decision of every person on earth. And I do mean, every day everybody will be thinking about this in one way or another. Whether they are in Africa, scratching for a scrap of bread to live, or, in the U.S., as one of the 78 million affluent baby-boomers. Health trumps everything else in society.
- Second, is the impact of globalization of products and markets.
- Third, is the shift of economic power to the emerging giants of Asia, particularly China and India.
- Fourth, is society’s demand for sustainability and the need for every one of us, every day, to think about, on every decision that we take, how does it impact the environment? What does it mean to our children and our grandchildren, and their children?
- Finally, fifth, is the emergence of the bio-economy—the knowledge-intensive bio-economy—as the lever of economic development in the western world.

Now, let us quickly touch on the health trend. I do not need to tell you folks about health, because you are living with it everyday. We all are. We see it everyday in the press. We see it everyday in our attempt to get into the Health Care system in Canada. But, 64% of adult Canadians are overweight. I did not need to tell you that. I did not need to tell you that 18% of adult Canadians are obese.
I did not need to tell you about the Type II Diabetes epidemic that is coming at us. I grew up in the corporate world in Eli Lilly. Eli Lilly’s major product was insulin. The first major bio-engineered product was human insulin. I thought, at that time, we had sort of peaked in the market. I never saw this wave of overweight, obese, Type II Diabetes coming on. It is huge. I do not need to tell you that we have got 78 million baby-boomers—wealthy, intelligent, technology-knowledgeable, that want to live forever—in the U.S. alone. They are going to shape the Health Care system. I do not need to tell you about the October 2nd report by the Fraser Institute on the Health Care situation in Canada of October, this year, in which they projected that by the period of 2016 to 2020, six of the ten provinces in Canada would be spending over fifty cents of each dollar publicly taken in, for health care. Now, if you want to see panic on a politician’s face, you want to see a provincial treasurer when that dial goes over fifty cents of every dollar. I sat beside the Treasurer of P.E.I. back about two months ago, at dinner. He had been nine years in the cabinet. He had seen Health Care costs go from the low forties, as a percent of the total budget, to projected as much as fifty-three cents this year. Think of what that does as far as strapping a government. Health dominates the agenda.

The Health Care bill has been growing at 7.2% per year. The danger, from an agricultural point-of-view, is that this is a huge, voracious gorilla that is loose in the valley. When that gorilla chews up the public spending budget of the provinces, the provinces deliver Health Care. There is not money for infrastructure, for buildings and roads and airports. There is not money for education and there is not money for subsidization of agriculture. If we think we have got problems here, we’re not alone. In 2020, the U.S. will be spending
U.S$4 trillion per year on Health Care. It is going to be 20% of the gross national product. Look at the last forty years in China, and look at the number one, two, and three diseases. They are heart problems and stroke and cancer. The same ones we have here. If you look at the other nations in Asia today with the addition of pollution of air, pollution of water, and the economic might that they are starting to exert. They are going to do, in thirty years, what it took us one hundred years to get to, in terms of the state of the health care, in terms of the diseases of affluence and aging. So, think of the opportunity that is there for agriculture. That is the point that I do not want to see lost. This is a huge problem, but it is a huge opportunity. I have always believed that problems are just disguised opportunities. Luck is just where timing meets opportunity.

Number two is the globalization of products and markets. This one is really tough for us, as Canadians. We have traditionally felt we have had a certain position in the world that we could produce better than anybody else. We did have positions on products like pork and beef and bread wheats and barley, to name just a few. But, now we’re in a market place where there’s no loyalty. We are in a market place where we have got a multitude of new competitors. We are sitting here in a harsh climate with a few crop options, up against a mighty giant like Brazil with new crop land to bring into production, double cropping opportunities, and out to dominate in certain of the oil seeds and grain crops. You do not have to look any further than the farmers of the U.S. If they did not have the bio-energy outlet, think of the trouble they would be in on corn and soy beans. Those were commodities that they owned. Now they are shifting to countries like Brazil.
As Canadians, we have still got to compete in the world. I think we have got to stand back and develop a long-term vision and strategy. We have got to realize our opportunity because of our capability with technology. Because of the harsh climate that we have got, we’ve got an advantage in certain crops and commodities. And we can lead the world. It just so happens that those natural climate-advantaged crops and commodities where we have a harsh climate which plays to our end point, fit very well into a healthy, Canadian, advantaged diet. I believe we can put that together and start to flatten out the escalation. We will not stop the growth of the health care costs, but, I think we can flatten out the escalation of the curve. I think, what provides us urgency to do that, is the drive of globalization. It is the energy that drives for the future.

Third, is the shift of economic power to Asia. And it is real. I mean, we are going to see that in 2008, when we see China step on the world stage at the Summer Olympics. China is going to step onto the world stage and say, “We are real”. Some time between 2020 and 2022, the World Bank projects that China becomes the largest economic power in the world. China today, and throughout the last fifteen years, has been growing at an average of about 9% per year. They tried to control the growth of their economy in 2006 and they still grew 9.9%. It is projected through to 2025/2030, that the growth in China will average 6% per year. India will average 5.4%. Canada will average 2% and the U.S. will average 3%. That is what we are up against. In addition to this growth in absolute economic dollars, there is the growth in affluence, the development of the middle-class, the change in diet that affluence brings with it, and, along with it comes the diseases of affluence in aging. The same ones that we have. They are going to be at the same rate of infection as we have with our chronic diseases of aging. Chronic disease conditions, however, I believe, offer huge opportunities
for us to establish, from a Canadian point-of-view, a Canadian diet. Think of the Canadian equivalent to the Mediterranean diet. That is what I am thinking of with Canadian advantaged crops where we can build value, we can lead the world, and we can define a new health outcome. A new health destination.

Number four is society’s demand for sustainability. Society’s demand for sustainability is really fixed on two factors. First is a growing awareness that climate change and global warming are real. No longer can we say it is a fluke of nature. They are real. Man-made intervention, increase in greenhouse gas emissions, and the wide-spread growing use of fossil fuels are really causing this global climate change and this global warming. I have got to tell you folks a story from a couple of weeks ago because it shows one of the problems I have with agriculture. I have it whether it is the Department of Agriculture in Ottawa, or it is us, in our farm communities. We build vertical walls. We do not go horizontally. I was in Detroit a couple of weeks ago, at a bio-energy conference, and this question came up thing. I think there is an anti-GMO equivalent out there. And I think that anti-GMO equivalent is ethically justifiable—is the label—and we are going to hear it come out of Europe. The question is going to be: is it ethically justifiable to burn a food crop as a replacement for a liter of gasoline? And, this came up at the conference. The answer that came back from that conference is: Americans like their SUV’s too much. They will let the food prices go up if they can still drive their SUV’s. I thought, I would never heard that kind of rationalization before. So, that is just something to think about.

OK. Then you have got this global warming and climate change, and then you have got this feeling in the middle class, particularly in the western world and it is heightened in certain countries like Germany, let us not do anything to leave
the environment in worse shape than we can. In fact, let us see if we can impact it positively—leave a better environment for our children and our grandchildren. So, when you think of that—global warming, greenhouse gas emissions—you combine this drive for sustainability and the middle class wanting to do something that is right, feeling it is right in their heart. Then you see a company like Wal-Mart, within the last month, say “we are going to set criteria out there for what we deem to be ‘natural’ products, certified by third parties. We are going to look at more porous asphalt so we can capture more water off our parking lots into the aquifers.” And you see the consumers. You know where this thing is going, from a sustainability point-of-view.

Then you look at the case of politics meeting opportunity. For George Bush that was with bio-energy, politics—what that can do in the rural setting—and you have an impact that is sudden and far-reaching. I do not believe we can comprehend right now how big this wave is, that is coming at us. But, the good thing about it, when you go out and poll the world on environmental sustainability and you ask people about Canadians (and Agriculture Canada has done this within the last year and a half), always it comes back to three things. Hard-working people, not too technology-literate, and care about the environment. We have got that position already in the world, that we care about the environment and we are stewards of it. Look at our biggest growth consumption product in the last ten years in the world, bottled water. Did you ever see a bottle of Canadian water sold in the world that did not have a picture of the Rocky Mountains on it? Even if it comes from Puslinch, Ontario? I mean, we have got that position in the world. That is a strength when you look at that as one of the major trends.
The last one I want to talk about is the emergence of the bio-economy, and what that means. The fifth trend. It means that today, we are seeing the bio-economy come on us with this wave of bio-energy. And how big is that wave? It is huge! How much effect is that going to have? We do not know. But watch next February’s planting intentions in the U.S. People are not talking horizontally: we are talking vertically. This ethical dilemma may be at us by next summer, if we do not manage well enough next spring. The U.S. has 106 ethanol plants built or operating. They have got forty-five under construction. They have got seven that are being expanded or doubled. They are going to take out of the corn crop next year, maybe as much as 2.2 billion bushels out of an 11.5 billion crop. It is going to be somewhere around 2 billion bushels. That’s 20% of the corn acreage in the U.S. going to ethanol. Now, a friend of mine says he’s got a quote for if things do not seem to add up. This dog is not going to hunt. Well, on this one here, they cannot do the exports. The U.S. is the back-stop for the world in feed grains, and corn in particular. They cannot do that and do ethanol, and keep their own livestock industry, and feed their traditional markets. It cannot be done. That is how fast this thing is coming at us. It is also such a huge opportunity. The projection is by 2013/2014 they are going to have a 16.5 billion bushel corn crop in the U.S. 5.5 billion is going to go to ethanol production.

I was talking to one of the major scientists out at Iowa State University because Iowa’s the bio-economy state for the U.S. There is no doubt about it. They have jumped out there farther, faster. They are talking about 40% of the corn going into ethanol. They cannot do that and the hog industry too. I think they’ll export the hog industry. I think we have got a real opportunity, from a Canadian point-of-view, if we manage the strategy going forward. But, this bio-economy is just
starting with energy. It is going to get everybody’s attention with energy. But, we are going to do a whole lot more.

Now, I grew up in and became such a fan of bio-technology because I saw the development of human insulin. I saw people stand in line at the drug store to get their name on the list so they could unhook from beef and pork. When you start to say, “do we have that product—that bio-product, that major product—that has that demand, in bio-products today?” I will tell you folks what it is. It is linoleum. Today, flooring products made from flax oil, in terms of hospital and education infra-structure, is just huge and growing. Every square meter of it takes a liter of flax oil off the prairies here. We just did one in a hospital in Alberta. 309 acres of flax it took to do the flooring in the hospital. It is that type of thing that can link the bio-economy to farming opportunity.

Well, let us talk about the future. The future is clear to me. The bio-economy is all about belief, will and imagination. What we need to do in Canada, is develop the belief, particularly in agriculture. We can do it. Then, have the will to implement it. Let us all try to move Canada away from the dithering nation. I mean, they were right about Paul Martin. He was a ditherer. But, that is us! We are ditherers. We love to go to meetings, and consult and put up lots of flip-charts, and take home a report and put it in the desk and never look at it again. We have got to develop that will to implement. When we do that, we start looking at the future. I am going to share with you folks a vision of the future. Not because of the vision, but because of some of the words that we need. Keep in mind the five trends that are dominating society out there. The dominant is health care. It trumps everything else. Second, globalization is real. Third is, economic power is shifting to Asia. It is not just economic power. 60% of the
population of the world will be in Asia by 2015. Fourth is, the demand by society for sustainability. The fifth is the bio-economy. We had a group of agriculturalists come together at the University of Guelph and the University of Saskatchewan, and we crafted a vision of the future. That vision is right up here. You can read it.

In the year 2015, Canada is a world leader in the enhancement of animal, human, and environmental health through the application of research, technology, and social innovations in agriculture and the bio-science industry. The last two are the real lines. The solution provider to society. We reduce the burgeoning health deficit, improve the quality of life, and embrace environmental sustainability. We are the trusted standard against which others measure themselves. Now, I did not put that up to get you folks to buy into that vision. I put that up as a possible vision. I put that up because I want you to buy into some words. The words that we have got to have in a vision of agriculture and the bio-economy as we think to the future.

Science and technology. This industry is totally dependent upon good science. Whether is comes from here or someplace else, we have got to be able to access it and we have got to be able to implement it crisply. Science is the leading edge. Solution provider. This, I think, is the single biggest word bridge that we have to get over in agriculture. We have got to stop thinking of ourselves as providing raw commodities to the world, and think of ourselves as providing solutions to society in health and the environment. Health and the environment are where the action is. Agriculture is not a public good industry. Health is a public good industry. Health is one of those things that is a citizens right in Canada...to have access, equal and publicly-funded. That is a part of being a Canadian citizen. It
trumps everything else. It is a public good industry. We have got to move agriculture into a public good space in people’s minds. The last is trusted standard. Back a few years ago, Ipsos-Reid ran a study around the world, and what came back was that the core competency of Canada is the trust bank we have with the rest of the world. It is more so in agriculture than any place else. I mean, the world does not trust the U.S. It does not trust the Europeans. It does not trust the South Americans. It trusts the Canadians, the Australians, the New Zealanders, and the Nordic countries.

When you start to look at a combination for the future, think of agriculture because agriculture and the bio-economy is all about five things. Abundant energy, abundant water, good farmland, and good farmers. It is all about good science, good farmers, good farmland. We have got that better than anybody else in the world. And we have got that bridge of trust and we have got to build off that bridge of trust. Now, back in 1971, John Kennedy stood at a podium like this and he said to the U.S. in particular, and the world at large, “we’re going to the moon.” We need a John Kennedy—a we are-going-to-the-moon moon shot for Canadian agriculture. We need a moon shot that takes advantage of our national, natural advantage. And we need to be able to provide solutions that have a huge health impact, but are done in a sustainable manner.

When we came up with a vision of trust and stewardship to the environment at the University of Saskatchewan, Roy Romanow joined us Some of you probably know Roy Romanow. I have got a great respect for Roy. I have known him for quite a few years. I cannot say I know him really well. But, he joined us. We asked him to be a part of it. That was one of those ‘ah-ha’-type of experiences for me because Roy Romanow came to that meeting and Murray MacLaughlin and I
had breakfast with him. Roy is very conscious, he had just released a few months before, the Romanow Report on the Medicare system. He is very conscious of his position. He is very much the custodian of public health care in Canada. His position was, when we had breakfast, he was going to sit in: he did not want to participate. He wanted to observe. He had an important meeting later in the morning, so he had to leave at 10 o’clock.

He came into the meeting, sat down, went through the introductions, and people started talking and by 9:30, Roy Romanow had the pen and he was at the flip-chart. By 12 o’clock, he said (and I quote directly): “if we can align the goals of agriculture and health, in ten years we can create the healthiest citizens in the world.” Now, ladies and gentlemen, that should be our goal. We should set out to create the menu that delivers the health care that makes our citizens the healthiest in the world...and we will take that whole package to the world. Today, Canada: tomorrow, the world. We have all got the same problems. And we have got crops, like flax, like canola, like oats, like barley, like pork, like salmon, and berry crops, like cranberries, wild blueberries, Saskatoon berries, blackberries. We have got the menu that we can put together. We have got to develop this with the health care industry, the medical profession, at the leading edge of the science. And they will do it. The problem is not the medical community: the problem is in agriculture and getting our thinking right in agriculture.

The medical community knows something is wrong. They know it is not sustainable, that which they have got today. They know that 74% of chronic diseases are diet related, and diet-impacted. They know that. What we have got to do is, together with them, join the health care system, join the medical
profession, put agriculture in there, and develop the Canadian menu that we can produce, because Roy Romanow is absolutely right: we can produce the healthiest citizens in the world in ten years, if we align agriculture and health. Thank-you very much.

Dr. Ed Tyrchniewicz
Wow, I think that was a bit of a challenge, was it not? You have been challenged. You have got an opportunity to either respond to the challenge with comments, questions. We have got lots of time for discussion. Who is first? You can come on up to the microphone if you like, or, I do not know what the rules are around here. I will make them up as I go along. Talk from wherever you like. O.K. Who is ready to talk?

Question
The Canadian pulse industry has really embraced this idea of becoming relevant by connecting ourselves to health and environment and agriculture and connecting agriculture to those two departments. Minister Strahl has been quoted as saying there is a need for convergence of vision between the departments. Do you see other Ministers in health and environment also echoing that sentiment?

Mr. John Oliver
Well, there is a working group, right now, at the Deputy Minister level in Ottawa, that is looking at this. It has been very much led by CAPI, Gaetan Lucier, and Owen has been involved very much in looking at how that can be done and get some live examples. We have to prove to Canadians and to the medical profession and the farming community that this is real. We have to give
them some hard benefits there. Pulse initiative is a great one. It also plays to our natural climate advantage strengths. But, I think it is in the early days of coming together. It has moved tremendously in the last couple of years, because you never heard it before two years ago and now it is moving along at a pretty good pace. I am also not a big fan of looking for leadership from Ottawa. This has to be done by us. Ottawa is just there as an enabler. It has to be done by the industry and, if you have to pick a political group, pick the provinces because we are headed into a possible gridlock situation, from a federal point-of-view. I just never, ever look to government for leadership. It has got to come from the private sector. It has got to come from individuals. It has got to come from the farming community. And we have to get them lined up, from an enabling point-of-view.

Dr. Ed Tyrchniewicz

I use chair’s prerogative to put Owen on the spot, since his name was mentioned in the CAPE initiative on health and agriculture. If you would be willing to comment on that, please, Owen?

Mr. Owen McAuley

The Canadian Agriculture Policy Institute has initiated the process. We have brought, I think, five Deputy Ministers together, and had a meeting with them a couple of times. Finally, after a year of negotiating with bureaucracy, we finally got the ‘ok’ to move ahead. What we are going to do is, basically, a review around the world. We will see what has worked, in terms of promoting these bioproducts, and in terms of producing healthier foods, to see what has worked and what has not worked. Part of the difficulty is, is that part of the silos do not want to see this work, because, find something that is worked elsewhere, that
means we have not done our job here. And so there is some real aversion from a
government’s perspective to move ahead. But, we are going to move ahead with it. We’ve made that decision. The process is getting under way. I think, Ed, you are going to be somewhat involved in that process, as we move ahead. And, I think it is good. But, this whole perspective that John is talking about is really more than just the flavor of the month. It is more than just the flavor of the year. Because, if you look at Europe, Europe has just recently implemented a process looking at the same thing that we are looking at. How do we produce healthier food for healthier citizens. So, it is something that has to move. I think governments have to be involved because there are a lot of regulatory barriers in place. They have to be involved, but they cannot be the leaders. You cannot ignore them, in terms of the process. I think that is clearly the message I would give.

Dr. Ed Tyrchniewicz
Thanks, Owen.

Mr. John Oliver
Ed, there is one point and I think it plays to what we are talking about here in Manitoba. Manitoba’s probably got more of the pieces to put this together, with the Richardson Centre, with University of Manitoba, some really good research. The piece that is missing—and I am throwing this out directly to Ed—is, we do not have the economic analysis capability in Canada that has the credibility with the health community to say what the benefit can be from this. We went through it with the flax initiative. There’s only one person, his name is Dr. Peter Coy at the Medical School at the University of Toronto, that can say, “if you take people to this diet with this set of assumptions over ten years, this will be the benefit to
society.” We did that on the flax study, and, if you look at flax in the diet, it has an impact, in ten or twelve years, of about $5.6 billion a year. We’re playing with big numbers, here. We really need that capability in a place like Manitoba because Coy, at the University of Toronto, is the only one that’s recognized by the medical community and he is so overworked. The pharmaceutical industry uses him all the time. So, we need to develop that capability.

Dr. Ed Tyrchniewicz

Thank-you.

Dr. Barry Prentice

I just want to pick up on that point. We have claims, I guess you would call them beliefs, that flax is good for us, and blueberries, and so on. But these claims cannot be made in advertising and labeling, and so on, or at least, they don’t seem to be. Where is this disconnect, and when are we going to get past that?

Mr. John Oliver

We have a lot of good anecdotal information. We do not have a lot of solid clinical work. It has got to be clinical work at the state of the art so that the ones who will determine whether or not it is good, is the medical profession. We have got to be able to do it with the medical profession. We are doing that on flax and we are doing that on pulse crops, at the present time. That will lead to claims. Probably it will take a little slower in Canada because we do not have the process up and running in Canada, to the same extent they do in the U.S. But, we will have claims on these products going through in the future, assuming that the data are there to support them.
Dr. Ed Tyrchniewicz

If I might interject on that point. I think the project that Owen was talking about, I think one of them sounds very impressive with how we can use food for a healthier population, for a healthier agriculture. But, I think one of the real challenges is going to be taking down what might best be described as the ‘Berlin Wall’ between Agriculture Canada and Health Canada, particularly on the regulatory side. There is a—I think one might use the term, almost visceral—not just distrust, but dislike. When we had our steering committee meeting in Ottawa just over a week ago, you could feel it in the air. I think there are some real challenges, but I think they can be dealt with. Sally?

Ms. Sally Rutherford

John, when you started your presentation, you talked primarily about alternate fuels and energy sources and then moved into the health side. You did mention the ethical dilemma that exists in Europe, and does arise here in Canada as well, between the use of production for fuels versus food. I would be interested to know where you think we may come out on that one, or where we should be heading. If we are going to be moving to healthier foods of the sorts we have just been talking about with extracts, essentially, or of specific products, how do we ensure that those healthier foods do not just go to a very wealthy part of a population? That we end up with an entirely healthy population, not partially healthy population?

Mr. John Oliver

There are two things that I would comment on there, Sally. I have talked to some medical research people that are quite interested in trying to put together this
Canadian advantaged diet. I do not know how many have noticed that the reverse ‘brain-drain’, to a degree, that’s taken place in the medical profession across Canada. We are getting a lot of people coming home that have been out on various assignments around the world and they are coming back to research jobs and being able to do the kind of things for which they used to just get funded in places like the States. There is a very strong Canadian flag, if you just scratch the surface of those people. There is a lot of interest in seeing if we can come up with a Canadian diet. I think if we come up with a Canadian diet, the challenge is going to be to make it widespread, so that everybody participates in it. Because I think that impact will not be on the cost of food, it will be on what we save in the Health Care system.

The second opportunity is one that I do not think has been explored at all. I use flax as an example because I am involved in it and I believe that we have got a model there, that others can look to. If you look at any of the work that is been done by Dr. Lillian Thompson at the University of Toronto on flax lignin, you will find that flax in the diet makes tamoxifen more effective in breast cancer treatment. The opportunity for us in the health care industry is to bring the marketing clout of the pharmaceutical industry into play here too, in an integrated diet to deliver more efficacious drug therapy at lower dose rates. We have had some discussions on that. The pharmaceutical community likes their position right now because—the point that Ed made—the pharmaceutical community owns the health department in Ottawa. We have got to break through some walls there. But I think we are just at the early stage of what can be done here. Looking at linking diet with disease, with drug delivery, and the outcome being a much healthier population of people. We have got to make it widely available.
Mr. Rob Tisdale
Agricore United
Wonderful presentation and I think if I was in the steel industry I do not know if I would be looking to sell or manufacture more hopper cars or maybe other conveyances. Anyway, the question is, looking for alliances and partners in this vision, has there been any approach to the life insurance business? I know from personal exposure, and from some of the discussions and developments going on, that the life insurance industry is in the same converging point. We have got to have a win/win for everybody, in that we need corporations with better health care services. We need healthier employees. We need lower cost group insurance programs. And, I was listening to some of this and I can see a convergence. So, that is my question, have they been engaged at this point?

Mr. John Oliver
There was some of this starting to happen in the U.S. To my knowledge, we have not done anything in Canada because of our public health care system and we have not thought about the long-term effect of extending life another ten to fifteen years, from an insurance company point-of-view. There was early work started on this in the U.S. with the health care providers there. Then agriculture just flipped like a switch when George Bush gave his state-of-the-union address and said we are going to bio-energy. It was like John Kennedy going to the moon and the whole industry switched and went to bio-energy. So you do not hear anything else in the U.S. today. They found the solution. This is going to rejuvenate rural infra-structure. It is going to bring untold wealth to farming communities. It is going to put agriculture back on the map. It is going to give them energy security. So, when you have that all together as a package, it has
sort of trumped that other piece. But, that point is a very important piece and they could be real allies to us, because the next administration coming into the U.S. most likely will not look at Iraq as their battlefield. The battlefields will be health care.

Mr. Brent van Koughnet  
Vancouver Port Authority  
Thank-you for your optimism. You mentioned that following or anticipating the trends is the key. There is one that I am struggling with and would like your interpretation. That is ‘food miles’ and how far away our food is coming from and how much energy is invested in the production of food. How does that link with people’s sustainability interests? Obviously we need to be an exporting kind of country. Does food miles play against us somehow? Or how would you balance that in the equation as a trend that we keep hearing come up?

Mr. John Oliver  
That is a good point. I do not know the answer to it from a food miles point-of-view. I do know the answer to it when we start looking at low emission building material, because all our linoleum is imported. So that issue plays as a negative on the greenhouse gas side because of transportation distances. It probably will. But I do not know the answer to that.

Dr. Ed Tyrchniewicz  
O.K. We have finally stumped John.  
Fernando?
**Fernando Selles**  
**Agriculture & Agri-Food Canada**  
Thanks for a very inspiring presentation. I would like to revisit this thing of the food miles again. I think it is going to reinforce some of the things that you are saying. If we export our product, the useful part of it is a very low concentration and we are spending a lot of energy on moving this bulk food. If we go into the chain of processing and incorporating bioproducts into these, although we may be transporting food a long way, once we transport the finished product, we are going to be saving fuel. But, there is a caveat on it. We need processing plants close to the source of origin to lower the amount of fuel that we need with the rural product that is so low concentration.

**Mr. John Oliver**

I agree a hundred percent. I think that is one of the big benefits of the bio-economy. It is that we will rejuvenate rural infrastructure. We will put the plants close to the source because the raw material transportation costs are huge costs and especially if you are dealing with products where you have to deal with the whole chain of co-products and some of the co-products do not have the value. They may even be waste products at the first processing destination. We have to be able to do that. It is better if we can sell the most advanced processed products to the world. There is no doubt about that.

**Dr. Ed Tyrchniewicz**

Thanks very much.

Any other questions?
I think we have had an excellent presentation with some excellent questions. A lot of thought processes, looking out there, that are perhaps a little different than when you started here at 9 o’clock this morning, which is a good thing. What I am going to suggest we do is we stop for coffee.

Dr. Ed Tyrchniewicz, Associate Dean
I.H. Asper School of Business
Morning Chairperson

John Oliver did an amazing job of getting our thought processes thinking down different wave-lengths about a vision for Canadian agriculture. A bio-based vision for Canadian agriculture. I think that is exactly what we wanted him to do. For the rest of the morning, we are going to get a perspective, more of a producer’s perspective, on bioproduct value chains and, generally, where agriculture is going. Owen McAuley, who is going to be doing our speaking, is somebody who has spoken at Fields on Wheels before. Owen and his wife and family farm in western Manitoba, in the area of McAuley and, looking at him, I think the town was named before he came along. It was not named after him. Owen operates a farm both in Manitoba and Saskatchewan and a variety of operations, including partnership in a large hog operation. I have known Owen for quite a few years. We have worked together rather intently on a public panel on grain transportation in the mid-1990’s, and I came away with the feeling that this was a person who had a forward view of agriculture. He was not always concerned just about the problems, but where it was going. Not surprisingly, Owen has been involved in a variety of organizations. Currently he is a member of the board of the Canadian AgriFood Policy Institute. CAPI has initiated a number of rather intriguing and innovative projects. They do have some shortcomings: they seem to want to get me involved. But, I guess that is their choice.
During that process, I really got interested in this whole health and agriculture connection and, I guess, that subsequently lead to this new project that was mentioned very briefly. I could tell many more stories about Owen. The only problem is, he could tell some about me. So, perhaps I will quit before I get too far behind. I would like to invite Owen to give us his perspective of bioproduct value chains.

Mr. Owen McAuley  
Producer and Board Member  
Canadian Agrifood Policy Institute

Good morning. It is always hard to follow John. I have actually listened to his presentation, not that particular one, but, presentations by John three or four times in the last few years, and it is always kind of awe-inspiring. It is going to be a tough act to follow, John.

Ed asked me some time ago if I would come and talk a little bit about a farmer’s perspective, in terms of bio-products, and value chains and what were the opportunities, what were the challenges, and what is next. I am going to be talking mainly from a producer’s perspective. Some of the work that the CAPI is doing in terms of coming to help build a vision about where agriculture has to be, not where is has to be, but probably where it needs to be going as we look fifteen years ahead, because that is really what CAPI is about. It is about trying to think where we have to be in fifteen years, what the policy changes are, and what regulatory changes are needed. This is not about thinking within the box that we are in. It is trying to think outside that box.
In terms of the opportunities, in terms of bio-products from a global perspective, I think the opportunities are immense. I think John went through a lot of them. Let us think of starting with Pulses. I was just talking with a person from Pulse Canada. Clearly, they are going down a road that is looking at how we increase our market share and how we increase the profitability for producers. I want to start there because really what this is about today is about building value chains that see every segment of that value chain strong. Probably a little later in my speech, I will talk about some of the feelings we have had in terms of some of the value chains that we have put in place in the past. We do not want to see that continuance of failure, because it affects the viability in the long-term. John referred to that a little bit about trying to deal with the long-term vision, but take care of the crisis that we are in today. Those two things are entwined and interrelated in terms of the process. But, from Pulse Canada’s perspective, they are starting clinical trials to be able to clarify those points in terms of the labeling, in terms of being able to better promote their products and do it in a fashion that is backed-up by clinical studies. Scientific proof that these items work.

Again, I was at their strategic planning session where they made the announcement. Part of their goal is to make sure that the entire chain, including producers, is enriched in this process, and it is just not captured by everybody outside the value chain that has more marketability, has more information, and has more ability to capture those benefits out of that process. Other opportunities—and we do not think of bio-products in quite the same fashion as what John was explaining, but even eggs—the Omega-3 eggs—are another way of promoting healthy foods. It is another bio-product within agriculture. There are lots of regulatory issues around all of these processes. Flax, linoleum products, the health benefits, fibers from flax. All of these things are part of the
opportunities that we see as we move ahead. Energy is huge. The ethanol and the value chains are really good examples of value chains that have worked very well for everybody in the segment, especially if you look south of the border. How it has been promoted, the incentives that have been provided and not just necessarily money. Regulatory changes, in terms of how people can enter the market place, how they can benefit from it. Clearly, there are huge advantages there. We had our construction team down here building technology that allows bio-gas to be collected from agricultural bio-mass. You look at even the ethanol in the integrated feedlot industry and the processes that fall out of that. Again, that is another really good example of a bioproduct and the value chains that are built around it. We talk about fuel from perennial grasses. We talk about developing business structures that let value chains be built around it.

I think another huge opportunity here, from an agricultural point-of-view, from a producer's point-of-view, is the environment and sustainability. And, again, John touched a little bit on that. But, how do we capture that at the rural level? At the local level? Not just for agriculture, but for developing strong role communities. I think the opportunities are immense, especially if you look at this bioproduct economy that we are evolving towards. Because, John is right. The future is not in doing what we have done in the past. If you look at Statistics Canada numbers in terms of producing bulk commodities, especially on the grain side, we have probably lost money thirteen out of the last fifteen years. Not individually, but, as an industry. And there is no sustainability in that in the long term. We are just at a point where we need to move. We need to move quickly, and we need to move in a structured manner, not just responding to the flavor of the day or the flavor of the year. We need to have a vision in terms of where we’re moving.
I am going to digress just for a minute. John was talking about the consumption of bulk feed stocks in the U.S. and the opportunity for raising hogs in Manitoba. I thought of the irony of that in terms of some of the decisions that are made at provincial levels, in terms of capturing opportunities. I am not saying that in a fashion that is trying to be derogatory towards the decision’s taken, because they are made for good reasons. But, overall there has to be a vision and it has to be shared. And it has to be produced and acted upon with a vision that everybody has. Regarding bio-products, the failure that I can see coming is that we do not start with a common vision. We start with a vision that is based on the flavor of the month or the flavor of the year, or the political flavor of the year, and we wind up with maybe less than what we expect in the end. So, we need to be really working hard at developing a vision, a common vision, not just federally, because I do not think you can look to one government to deliver a vision. It is provincially. It is municipally, and, more importantly, it is probably the vision from the organizations that are represented in this room and every organization that is represented in agriculture. It is very clearly that it is farm organizations, marketing clubs, and everybody that has the ability to lobby government to make changes. There has to be a common vision about what we are trying to accomplish. When we start developing those visions in silos, in isolation of everyone else, all we get out of it is a debate rather than an outcome. I think that is pretty sad if you look at trying to capture the opportunities that lay in front of us here today.

Every time we see opportunities, there are always challenges that come along. I think the biggest challenge is having a common vision. If you look at bio-fuels and we just made a trip down through Minnesota, through South Dakota and,
very clearly, there has been a process that they went through down there that brought them together with a common vision. The results of coming to that common vision have been dramatic, if you look at the role development and the wealth and the depth that has been returned to agriculture. I am not saying it is good or bad. I am just simply saying, if you come to a common vision, it is a lot easier to achieve your goal than trying to develop visions in isolation. They started down there. First of all, they mandated ‘x’ amount of ethanol. Secondly, they put the regulations in place that support new-generation co-ops so that there is involvement from the local perspective. They provide guarantees to the development of co-ops. They provide start-up funds for those processes. They mandate a blending fee so that the next person in the value chain has an advantage of buying these products and blending them. The whole process, federally, from the state, and right down to the counties into the organizations, all come together with a common vision. It is absolutely amazing the amount of progress they have made, in terms of developing that process. The interesting thing, I think, really, from down there, was coming back to this process. I looked on the website yesterday, under their agriculture department, in terms of their bio-energy process and here are the words that introduce the process. It is “advancing renewable energy, American rural renaissance”. That is the title they apply to the vision. It is not about agriculture exclusively. It is about that rural renaissance. It is about developing a strong rural economy, which agriculture is a part of. And the vision in itself includes agriculture and includes wealth to agriculture.

Again, coming back to that whole thought process. One of the real difficulties that we have in terms of the challenges is our ability to come together and to make a decision; to decide that we are going to do something and then move
ahead with it. Someone referred to this this morning about governments being ditherers. Well, I do not think there is anybody worse than Canadians for being ditherers, whether it is farm organizations or whether it is governments. But, we see an opportunity. We were interviewing Bob Beard(sp?) from Warverton(?), just to give you an example in terms of what I mean by this process. Warverton buys a lot of wheat from Manitoba. They buy a lot of wheat from the Canadian Wheat Board. His comment was that in Europe, if we see an opportunity, it will take about a year for us to get our regulations and our policies adapted to capture that opportunity. The problem you have in Canada, he says, is it takes you about four years to decide you want to capture it, and then, probably another decade to get the policy in place to be able to capture it. Clearly, that is what we talked about earlier this morning. I think that is really where we are stuck today. I do not blame government. I blame farm organizations. I blame the lobbyists. I blame everybody that is out there trying to protect themselves from change. The comment made at the microphone this morning about if I see this happening. You know, we need to be building less hopper cars. Well, do you think that the union that represents those people building hopper cars is going to be in support of this then? Or, do you think they are going to be talking to their MP tomorrow to say we should not do it? I mean, I am serious. You think about that. And there are a lot of voices going at government and governments are never sure which one they should be responding to, so, what they do is they do not decide. It is just a lack of a common vision, even from the grassroots, about how we should be moving toward a common vision about what we are trying to achieve. So, I was really glad to see John put up that whole perspective of coming to a common vision, because he kind of stole most of what I was going to try and put in my position today.
The other thing, I guess, is coming back to the whole perspective of making decisions. If we see this opportunity, we want to move ahead, we need to be putting money into research to support this kind of process. The Pulse Innovation Project is a good example of governments putting money forward. We have a vision. We are going to move ahead. You have got to give a lot of credit to that whole process because, there, they have come to a common decision on a small piece of a segment of an industry that says we are going to move ahead. But we do not do enough of that. We just simply do not do enough of that. When we do that, then we are asking producers at the farm gate level.

Getting outside Pulse but thinking of new processes is, that obviously there has to be a risk management associated with that. If you are going to ask a producer to move from doing what he is comfortable with to moving into another entity, then there probably has to be some risk management move with that. Because the risks, in terms of production at the primary level, are just so immense today. I should have brought an overhead to put up to show you what it means to evolve down a process where, when I started farming, it took me fifty cents to earn a dollar—I spent fifty cents and earned a dollar. So, I could stand a lot of risk. Today, when I move into a commodity, into a commodity for sure, is that, I probably spend ninety-five cents to earn a dollar. So, I cannot develop much risk. That is what the risk management and that’s the crisis that John talked about this morning that we cannot ignore. We have to continue to deal with that crisis. Otherwise, it is going to be hard to get the buy in at the producer level, I think.

I guess, the other process is, in terms of regulation, in terms of capturing the advantages in the bio-products industry, is our whole regulation system. I will give you a couple of quick examples: we know in the ethanol industry, in the hog
industry, and I am going to come back to the licensing of grains, another huge barrier to moving ahead. In the ethanol industry they do not care about what protein it has got. They do not care what the milling quality is, and they do not care how much fiber it has got in it. What they care about is how much starch is in it. They do not care what it looks like. Their quality parameter is how much starch it has got. If you wanted to grow a feed stock to supply to an ethanol plant, which is a bioproduct industry today, you could not develop a variety and have it licensed in Canada today, for that. You have got this opportunity, and you have got this barrier. This barrier has been recognized since we changed the Crow rate, twelve or thirteen years ago. A lot of very dedicated people have worked very hard to move this process to the next step. We are talking about it. We have not seen the rules, yet. But, hopefully we get beyond those kinds of barriers. Because, without the opportunity to capture the advantages of that bio-industry, whether that is feeding hogs or whether it is producing plastics from wheat, or whether it is ethanol from wheat. Unless we can move past the point that the only wheat we can grow is one that mills well in Japan, because that is where our market was yesterday, and allow us to produce a product and a feed stock for an industry that we can see evolving, we miss the opportunity for everybody in the value chain to capture value from it. As long as the farmers are forced to produce, and sell it to an ethanol plant at a feed stock price, a farmer is going to go broke. So, the viability of the entire value chain again is threatened. These are the kinds of little barriers that stand in place that, unless we have that common vision, it is hard to capture.

Governments do support new concepts. I think of some of the things I said on the board of MRAC. We put money into looking at anaerobic digestion. We put money into how we produce bio-gas. We put money into developing structures
organizations. I was not there this time, but I was part of the original board that set up MRAC. I think a lot of us have been there and done that. So, governments are supporting it, but not in the fashion of saying, “well, here is money”. But then they never change the regulation, they never change the thought process about how you move to that. They can stand-up and say, politically, they have supported it, but they have never made the move that would allow the change. That always tends to frustrate me greatly. As Ed said in the beginning, I have sat on a couple of blue-ribbon panels and governments of the day. You can put a report in saying these are the things that must happen so that this process can move ahead. The government has a political agenda that says that we are trying to change this piece of it.

I will go back to the Western Grain Transportation Act, which we talked about. We identified changes to the WGTA Act at the time, the old Crow’s Nest Pass Rate, that are things that have to happen to allow you to succeed. So, we take away the subsidy for exporting grain, and tell farmers you have to do something different. Half my land is in Saskatchewan. We stand back and we say, well, if you have to change, you can no longer export grain. You are the highest spot in the world, basically, for exporting grain. So you have to do something different. “O.K, I will do something different.” Well, individually, I can change. But, collectively, how does an industry change? Well, they looked at it and we did a comparative advantage study at MRAC again saying where our advantages are. Well, it is producing eggs. Saskatchewan can produce most of the eggs, the study told us, for North America. Can Saskatchewan produce more eggs? No. Well, I know we can raise more pigs. No, we cannot do that either because the municipalities do not want that to happen. Well, we can raise cows. Well, O.K. How does Saskatchewan double its cow herd? They cannot import them from
the U.S. because there is a law about importing them from the U.S. You have got to go through a long quarantine process. You are not going to buy them from Manitoba and Saskatchewan because they are of the same mentality. With six to eight years of non-selective breeding you earn double your cow herd in Saskatchewan. This takes another 5 million acres out of 35 million, that have to be adjusted. So, we had a policy change and this is the impact that this is going to have in the bio-industry. We need to come to a common vision because, at the end of the day, what happened at WGTA is, we told these farmers you have to change. But you cannot change to anything else except growing hard red spring wheat. You cannot grow a feed variety that will feed pigs, you cannot import more cows; you cannot grow eggs. You cannot do anything, except do what you did yesterday.

So, how? An individual can change. I could go buy 100 cows. But how does Saskatchewan grow? How does the industry change? That is partly what John was talking about this morning. That and governments needing to get their act together. You cannot look for leadership from government. You need to start with a common vision right from the grass root level, take it forward to government, government will support it, government will, we hope government will support it. Sometimes they have not done that, even if you have common vision. Everybody has to be part of that common vision. It can not be government vision and it cannot be producer vision. It has to be a common vision about how we are going to succeed. That will be the most difficult part of achieving what John said this morning.
There is no doubt in my mind that the future is going to be the use of locally grown products in a local market. We need to satisfy the market in Canada to produce those products, if we can, for our local people. If that is food, and healthier foods, that is great. But, if it means that I should be growing a starch wheat to produce ethanol because the Canadians, as a whole, have decided that we need ethanol because it is better for the air quality, then we should be allowed to capture that market. Not just from the consumer’s and the production of ethanol, but from the producer’s point-of-view too. We have to be able to capture all segments of the chain. Otherwise, in the long term, there is no viability. Unless, you believe governments are going to step up to the plate and subsidize us. Subsidies to the tune that we can continue to produce hard red spring wheat that mills well in Japan, and sell it to an ethanol plant for $2.50 or $3.00, or whatever they need. The existence of bioproducts is going to depend upon large supplies of a relatively cheap commodity. We need to think past where we are at about trying to produce higher quality foods if that is not what the public and the local market is demanding. So, we need to be able to move past that. And that is going to be very difficult.

The national science advisor to the Prime Minister of the last government made a speech in Saskatoon where he said that it was immoral to think that we would be taking food to produce fuel so that someone could run their SUV. Now, think that through. Is that a common vision about how we empower and enrich everybody? Or, is that a common vision about imposing the will of a consumer on an industry? I wrote a strongly-worded letter basically saying this is great. If this is what the Canadian public wants, then government should support me to grow this food for this industry and should not expect me to expend my equity to fulfill the needs of Canadian citizens. But, again it comes back to that whole
perspective of the different voices that lobby government and interfere with making a common decision. I actually had an opportunity to have supper with this individual just after that letter was written. He said he was misquoted, but I had his text in print form. He said that he had really misrepresented his speech. Who was I to argue with him? But, I think it shows the confusion of not having a common vision. I think there is clearly a move around the world. I am going to kind of come back to the CAPI experience. I know the question that Ed had asked me this morning at the microphone.

We are initiating a study, basically looking at what has worked. How do we move from where we are at without making the mistakes that other people have made? In other words, we are going to look around the world and we are going to determine what has worked, what has not worked and why has it not worked? What are the costs and who benefits from it? If you are simply going to introduce a system that says only the wealthiest people are going to benefit, you are probably not going to get much support to come to a common vision. That is part of the process that we are going to go through, in terms of selecting the people who are going to do the review, selecting the areas that we are going to review in, and making sure of that. I do not know whether I tricked Ed, or seconded him, or conned him into helping us in that process. I am looking forward to getting started with that and getting the people working at it. The whole process is really about trying to find a system that not only sees the consumer benefit, but demonstrates at the end of the day, that we can all come to a common vision that does not just benefit the wealthy, does not just let us spend a lot of money making the mistakes that other countries have tried, and makes sure that we are spending money that does not come up in small pieces. Something that is going to be expanding. We have only got so much money to
spend and we want to spend it in a manner that is going to produce the biggest and the best result with the best dispersement. The difficulty that we had was the difficulty that we had in terms of achieving the results of that common vision toward that perspective.

We had a meeting in December with five Deputy Ministers. You talk about the difficulty of getting five Deputy Ministers to come from within their silos to a common vision! They all came to a meeting and we described the project we were going to go through, and they all agreed. We had four NGO’s, I think, and came to a common vision that we are going to proceed. All the Deputies agreed. In January or February we got a letter from one agency saying, yeah, we are still on a go, but we want these criteria cemented in the process. Well, that is not what we agreed to. We go back to the Deputy, and he says, “no, no, do not worry, I will get that fixed.” That is not what we agreed to. April, we get another letter from another ADM saying, we have got to have this criteria, this criteria, and this criteria. That is not what we agreed to. Back to the Deputy Minister. And so, in June we get another letter saying, do not worry, the Deputy says we will fix it again. Another letter saying we have still got to come back to this one criterion, we have to have this. We do not want any information put out until we have had an opportunity to vet it. I mean, we are doing this study so that we can put it out. This is completely against the train. So, in November, almost a year later, our board just decided, we are done playing this game. We have got the money in the bank. We will just do it. We notified the DM’s office, “We are going to do it. We are going to proceed. We are going ahead with or without you. You can explain the embarrassment to the NGO’s and the public at large why you are not going to do it, but we are going to proceed.” And we went ahead with our meeting. In the middle of our meeting, the message comes
back through the DM’s office that, yeah, well, they will put up the money and we are going to do it now. But, it is just hard to get government involved in the process. It is hard to keep them involved in the process and it is hard to get past that four-year window when we will have another Deputy or another Minister and another mandate and a different perspective and we want to wait and see what that is before we make any bold moves. I am not being critical. That is the process that we are in. We will just keep plugging away and doing what we have to do.

In terms of the evolution of these bio-products, I will tell you right now that there is going to be some huge shifts, in terms of the logistics and probably in terms of the movement of a lot of products, especially if we can come to a common vision and move ahead. The comment this morning I thought was kind of ironic. If I was in the hopper car building business, I would probably be thinking about something else. Clearly, if you look at the shift in agriculture in the last fifteen years, the movement away from bulk commodities, the movement towards processed commodities, the recent announcement by CN about the container traffic going to increase, and the evolution of Prince Rupert moving containers, that shift is happening anyway. I will say, even for a lot of people in this room, I am sure there is some opposition to that moving too quickly. Especially those people who have made huge investments, in terms of accommodating the status quo. I would expect if they were doing their job right, there will be lobbying to try and make this change as slow as possible so that they can capture the benefits of the investments they have made in the last few years. That is alright. At the end of the day, if we are going to continue to have a strong, healthy community in the rural areas and be able to capture the opportunities that this bio-product industry has in front of us, we need to
capture those benefits today. In the long term, all you’re doing by trying to oppose this change is simply, putting a death nail in terms of how this industry can evolve over the next fifteen years. It may be good for you, or good for your industry or good for the company you represent today. But, really, the future of those companies are dependent on capturing those opportunities that are in front of them and making themselves relevant in tomorrow’s economy. I think the economy is going to change fairly quickly once this car starts to roll down the hill. Anybody who has not had the opportunity to see what the benefits of this bioproducts industry and what difference it can make in those rural communities, and, in terms of the economic impacts that it can have, they probably need to make that trip through Minnesota.

I see Henry Nelson, there. He was the guy that probably put that together and took a group of people down on that trip. That was an amazing eye-opener to me. They have come to a common vision and it is not around agriculture, it is about renewable energy. How their Agriculture department is selling it is “an American rural renaissance.” I found that really amazing because they have not tried to promote agriculture as being the driver here. Renewable energy is the driver, from the federal perspective. In terms of the state perspective, it is rural renaissance, and that has been ingrained in their federal system and that is how they are selling it. You need to probably make a trip. In Morris, Minnesota, they harvest their corn, using strippers. They do not put the stover through the combine anymore. They strip the corn off it. All the stovers are left in the field. So, now they have got this problem: what do they do with it? Well, the corn growers got together and they are going to bale the stover. They are going to bring it in to a bio-gas plant that is probably going to be built by Canadians (the technology). They are going to turn the bio-gas into methane and they are going
to put the methane in a pipeline. They are going to transport it into an industrial park on the outskirts of Morris. They were telling us that they have got people lined-up because they will give them a five-year commitment on gas price, and they just went through fourteen cent gas last winter, so this is a huge factor. You have got the corn growers and the state supporting it, the federal government supporting it, the town supporting it, the county supporting it, and everybody supporting it. They are going to use the corn stover, convert it to gas, pump the gas into the industrial park, provide that gas on a five-year fixed rate to the people that go into that industrial park, and that’s what you call a bio-chain. Using bio-products with a value chain that really works for everybody. The commitment and the common vision there really demonstrated to me that if you do not have that common vision, if you do not have that underlying drive to keep everybody focused in terms of what that vision is in the end, you probably will not achieve the successes they have. They have done it based on their whole desire for renewable energy and less dependence on exported oil. From a Canadian perspective, we are maybe not faced with those same pressures, but we do need to find that common driver that will allow us to come to a common vision. Without it, at the end of the day, we probably all are poorer.

Today, you hear a lot of people, especially in the primary production level, talking about how poorly they are doing. That is probably true, if you look at production of bulk commodity grains. The return on investment has not been great. I would have been far better off to have my money invested probably anywhere other than land to produce wheat on. The other thing that is clearly going to be very, very difficult to come to a common vision at the producer-level, especially from a grain-producer’s perspective, is government policy. Not policy developed in isolation, government’s policy in responding to all of those voices.
coming at them in terms of we need value added. This is where the move is. We need to move to value-added and we need to move ahead. A lot of farmers in Saskatchewan and Manitoba have moved to that value-added. They have built hog barns, they have built cow barns, they have built meat-processing plants, and they have built a good deal of pig operations in joint ventures. A lot of them have not proved to be successful, simply because everybody had a vision in a silo that was independent from that common vision.

The person with the least ability to extract value from that value chain was probably the primary producer. He had no marketing power. He was probably not co-joined enough to be able to extract those rents from the system. So, you are going to find a lot of resistance at the producer-level. I am not talking on the individual level. There is always the individual that government can hold up and say, look what this guy has done. You are going to have a lot of problems from the industry level, convincing people that the next moves are the right moves, especially if you do not come forward with a common vision that is supported by governments, by industry, by community, and by the farm organizations as a whole. You are going to have a tremendous time selling that next perspective, because producers have just been coerced into becoming involved in these processes so many times, only to find out that the regulatory aspects around it simply restrict your ability to extract rent from the process.

I come back to the point about being able to put a health claim on a food product to be able to extract more value from it. The CFIA, was basically saying they have about 40,000 products on the shelf that they have to review today. 40,000! If you want to put a product in to have it approved, you probably have a two-year wait. Does that sound conducive to moving ahead and capturing
opportunity and capturing value? It is one of those regulatory things and we have regulations that seem to protect everything. We have products that have been accepted in Europe and accepted in the U.S.A., but are sitting on the shelf in Canada, waiting on independent Canadian research to back-up the claim that the food product is safe. Functional foods are probably one of the biggest ones. Surely, we can come to some kind of common position in terms of regulation. If the Europeans think it is alright and Americans think it’s alright, hundreds of millions of people have their stamp of approval on it. 30 million Canadians need to re-do the research, which could take six to eight months and then wait two years to have it approved? Really, we are putting up barriers to capturing opportunity, rather than providing opportunity, from my perspective.

It is probably the same in terms of transportation. Provincial regulatory changes are no different in terms of movement. We had a neighbor hauling product just last week. He lives in Manitoba and he was hauling his product into Saskatchewan with a trailer. In Manitoba, you need a class three license to operate that vehicle; you go to Saskatchewan, you need a class one, as he found out the hard way by getting a ticket. We cannot even have common regulation across provinces to try and capture opportunity!

I guess you get from my theme of that, clearly the bio-product industry, from a producer perspective, is real. You can see the opportunity in front of you. What we need to do is to make sure that we come to a common vision; get the regulations fixed, and a lot of regulation is in place to protect the status quo today. We should not throw away what we have today, but we should not be impeding our opportunity to catch tomorrow. That is the secret. I have been in this policy development business most of my life and, the changes we make, we
hold up and say, look at the big changes we made. But we always seem to be five years or ten years behind, in terms of being on the leading edge of the curve on a lot of the industries. This bio-product industry is going to be the next one. We are going to capture it. We have to get past those kinds of oppositions, come to a common vision, and jump on it as quickly as we can without wasting our money, but do it in a fashion where we do have a common vision.

**Dr. Ed Tyrchniewicz**

John, you have been sitting there too comfortably. Would you like to come back up here? I think we are going to get into another ‘free-for-all’ and you might be a target. So, we might just as soon have you up here. I think we have had some interesting perspectives, and many questions come to my mind. But, before I jump in, I invite people to come to the microphone to raise questions, make commentaries on what Owen has said, what John has said, and challenges you might want to put to both of them.

**Sinclair Harrison**  
**President of the Farmer Railcar Coalition**  
Just a quick comment about railcars. To reinforce what was said, whether you believe in what the Farmer Alcar Coalition stood for we were there for ten years, and ‘Mr. Dithers’ and company, dithered. That just demonstrated that we need to act quicker in this country and in the provinces.

I enjoyed both your talks, but you seem to avoid the funding of these projects by farmers. Going through the list here, the only financial institutions, and I do not think they are a financial institution, is western diversification. The banking community is not present at this forum, and I think they should be. I am not
faulting the organizers; I fault the banking community. But, the company that I am with is attempting to work with farm groups in setting up ethanol plants, bio-diesel plants, and feed lots. You go out and you meet with municipalities and interested farmers. Their eyes light up until you come to raising funds. For a 35-million liter plant, you need $35 million, and that is not a big plant. For a 100-million liter plant of ethanol, you need $100 million. If you talk about producer involvement, and I think that is where the real benefit for agriculture is, is owning part of the production plant, not just growing the grain for it, because it is a competitive market, these plants. Husky is going to buy grain at the cheapest possible price they can. Gary Drummond, who is building just outside of Regina, is going to buy grain for the least possible price he can. I think if farmers do not get involved in the processing, they are going to lose-out on this opportunity. We are sitting back, not helping the farm community. If you go to the bank, they will lend you money, provided you have not mortgaged your first child already. A lot of farmers are in that position. They do not have the cash. They are better off, I think, in investing in an ethanol plant or bio-diesel plant than buying another quarter of land. So, I would be interested in the discussion that you have had with the banking community, as to what they are prepared to do. Are provincial governments, are federal governments prepared to guarantee loans for farmers to invest so that they can seize this opportunity?

Dr. Ed Tyrchniewicz

Thanks, Sinclair.
Gentlemen?

Mr. Owen McAuley

I will take the first crack at that.
One of the things that I want to mention is the new generation co-ops in the U.S. and the incentives that are provided by the U.S. in terms of development of that bio-energy process. Regarding new generation co-ops, the rules are different about the money going in and coming out, quite a bit different in Canada. I think, the Manitoba Rural Adaptation Committee has actually done a study on new generation co-ops quite a few years ago. It was probably one of the first things we did, the first year we set it up. But, how the money goes in and how the money goes out are completely different. There are deductibles going in and you take them out when you need the taxable income, which is a huge benefit. But, the other side of that, coming back to Sinclair’s point, is, governments. Once you come to a common vision, you then have to provide incentives to make sure that it happens, especially in the start-up years. In the ethanol plants in the U.S., a lot of them, I think 46% of them even today, are owned by new generation co-ops. They are owned by producers. New generation co-ops in the U.S., if you can gather up 20% of the money in the community, the government will guarantee the other 80% for a 3% fee of the loan. That is a pretty big incentive, which most banks would pick up on. From fronting the producer money if your producer puts money to buy a share in the co-op, he would have 90% of his money guaranteed by the federal government. So, you think about that. And then, in the beginning, when they started ethanol plants, the first $7.5 million of feed stock that went into the plant was paid by the federal government to off-set start-up costs.

Today, when we were in Minnesota, I asked the question of the banking community down there. How many of these new plants are now funded through that program? I think the word he said was none. There is enough confidence in the industry, now that it is up and running, that the banks do not ask for a
federal guarantee because nobody wants to pay the 3% fee. When you start a new process, coming to that common vision I was talking about, governments have to step up to the plate and provide some kind of incentive to make sure that it happens. I made the point before, but, I think, the Manitoba government through their funding agency had a program where they guaranteed start-up programs or they were guaranteeing a portion of the fund provided. And, I think the history of the Manitoba government is that if there is very minimal cost to the government to provide those start-up guarantees. So there are clear examples about how you can make that work. I think the banking industry today, if you went to them, would probably demand that you have probably 50% to 60% of the money up front and then try to raise the other 40% from producers, mainly because it is part of the history and because of their lack of viable cash sitting around. This would probably indicate the answer to your question, Sinclair. You would have a tough time finding those monies without having someone from outside of your community coming in with the money to build them. So, that is a problem.

Mr. John Oliver
The comment I would make is that I believe the money is out there. I will give you a couple of examples. That is the reason that we need to be thinking of the bio-economy and we need to be thinking of the health care industry, and that sort of thing. If we have, as a core competency, a country as the trust bank we have with the world, the core competency of the U.S. is the ability to mobilize will around national security. The national will in the U.S. right now is looking at producing fuel efficient specific fuel crops. So, they are moving past this generation of corn-based ethanol to the next generation of fuel specific crops. A funding agency in Boston came to him and said, do not come for $20 million,
come for $50 million because the money is there if you are on the right side of the equation. Agriculture in Canada today is not on the right side of the equation. Health is on the right side. The bio-economy and bio-fuels and production in environment are on the right side. If we move to that, we will find the money is also there. It will be more private money than government money. Now, one specific point that I will make is sometime between now and Christmas there is likely to be a federal government announcement of a new agricultural bio-mass innovation fund, which will be there to help put these kinds of projects together. It is going to be in the range of $140 million to $150 million, with five-year funding programs. So, there will be some opportunities there, and there are some initiatives starting. But, I just do not wait and depend on government to do these things.

Mr. Brent van Koughnet

Owen, I always love hearing you speak. You are one of those thoughtful and rational voices in the Agriculture industry.

I am struggling with something. We get excited about the things that create common vision, and yet, when I think in my own world, I have only been rewarded well for things that are an uncommon vision. We are looking for ways to solve industry problems with a macro-version, I get this feedback from producers already, “ah, good I only have to worry about production again, if this bio-diesel thing takes off.” All of the momentum that we started to build about how you fit into what is unique and where some of your individual strengths are, and where you might be able to take what you do and de-commoditize it, starts to fall away when we think only about mega-projects. How do we balance the macro-version of common vision with the micro-vision
of uncommon vision? I really think we would be doing a disservice to the agriculture community if we drop off the table all of the unique things that we could do because there is a big policy common vision.

I would appreciate comments from each of you.

Mr. Owen McAuley
Brent, I certainly was not trying to push the concept that we need to drop those uncommon visions. I think what we need to do is come to a common vision about the need to change, and these are the areas that we need to change in. We should still be supporting those uncommon visions. So, I think I was talking in the broader perspective in terms of coming to a common vision, that things cannot say the same. We need to find the innovators that bring forward those uncommon visions and help build them into the mainstream. Because, quickly uncommon visions are commoditized. Think of the organic industry. Wal-Mart is now going to sell organic, and you can be sure they are going to be looking for that commodity rather than the individual producer. So, I was not trying to discourage that process of coming to that uncommon vision. But, we need to have a common vision that things cannot remain constant.

Mr. Brent van Koughnet
I am sure you were. It is just how quickly that gets interpreted as, you know, the next new train to jump on. We all know what would happen, quickly, if, this is really about the bio-fuel industry is just about disappearance of crops. All those acres get chewed up. And how long does it take for land prices to go up and everybody competing over land issues, and we have as many people in financial
difficulty as we had before if we do not change how we create multiple opportunities, not just ride the next one as long as you can?

**Mr. John Oliver**

I think Owen is absolutely right on the need to get to an overall destination and vision that is fifteen years out, and we line up the things that we do to move steps forward in that. At the same time, I have a strong belief that we have the ideas out there already on the farm and in the farming community. If only we could provide an environment to grow the farming operation into a farming enterprise that goes horizontally in the community. I think that’s all part of this dealing with today’s situation. But, also, it works towards the long term goal. Thinking of ourselves as solution-providers to society in places we can impact like health and energy. Probably another area is going to be on the whole bio-materials area in the future. Those are all things that fit into that long term vision. But, we do not do ‘one-off’ kind of things. I would like to see the new agricultural policy framework put within that five-year vision. It is a building block, rather than a ‘one-off’ that we renew every five years and we go through a whole series of consultations and activities, but, it is sort of a ‘one-off’ situation. I would like to see that as a building block.

**Dr. Ed Tyrchniewicz**

O.K. Thank-you. I think your thoughts were stimulating. You have forced a certain amount of mind-set changing, which was the intent of this morning. We have got a lot of ideas out on the table in fairly broad, general terms. I think this sets the stage very well for this afternoon’s discussion, when we will be dealing with some more specific issues in bio-fuels, ethanol, pulses, logistics and
transportation. So, with that, I would like you to please join me in thanking our speakers.
Luncheon Speaker

Dean Glen Feltham
Dean
I.H. Asper School of Business

It really is a great pleasure to introduce Stan Struthers, Minister of Conservation for Manitoba, an individual with an extraordinary passion for his community and for our province.

Minister Struthers?

Minister Stan Struthers
Minister of Conservation
Province of Manitoba

Thank-you very much, Dean. I am very pleased to be here. I usually start by saying, “hi, I am Rose-Ann Wowchuck.” Then people see Rose-Ann on the street and they say, “gee, you have gained a lot of gray hairs since last time I saw you.” She does not have the kind of gray hair that I do, but she works ten times harder than I do. I am the first to admit that. For example, today, Rose-Ann would really like to be here, but some of her constituents are knee-deep in water. Normally, that is not a problem with her constituents at Waterhen(sp?), except that the water’s going through their living rooms right now, which does make it a very tough situation. She is with the Premier at Waterhen, talking with a number of her constituents who really have a problem on their hands. And I know that Rose-Ann will be working to help them.
I am very pleased to be able to be here on her behalf, and I am very pleased that the theme that you are dealing with focuses on opportunities and the challenges of bioproduct value chains. It is a topic that I think is very relevant, extremely relevant, right now, today, to the agriculture sector, and here in Manitoba and all across our nation. In Manitoba, we understand that bio-products provide a unique opportunity to reposition agriculture as a solution to some very important national issues. Our provincial government policy is to enable the greatest possible financial return to Manitoba farms and to all rural communities. We support initiatives that lead to greater wealth for producers, with more of the down-stream value going back into the communities that produced the original goods. We believe strongly that concerted efforts are needed on both sides of the farm gate. A strong bio-product sector can only be accomplished if we have a healthy and competitive primary production sector. Our rural producers must provide products at a competitive rate to ensure a robust, value-added secondary sector.

 Manitobans take pride in the fact that locally grown agrifood products nourish our own families as well as people in hundreds of countries all around the world. Yet, as our society becomes more and more focused on prevailing global needs, the agriculture sector finds itself expanding to meet them in many areas, including healthier environments and lifestyles, disease prevention, and sustainable development.

 Bio-based products and processes represent this century’s industrial revolution. A bioproduct sector will attract and grow companies that will take advantage of Manitoba’s renewable resources while providing jobs and helping expand the rural economy. We are already seeing more and more emerging opportunities in
value-added industries. These opportunities are opening doors to a widening range of income streams for our farms and rural communities. The provincial government will continue to work with the public and the private sectors to develop a framework that addresses these issues, a framework that enables Manitoba to fully capture the opportunities that a new bio-economy promises.

I would first like to talk a bit about Manitoba’s long term strategy for bio-fuels. To begin with, Manitoba is a leader in Canada in the development of clean energy alternatives. Our active development of bio-fuels, both ethanol and biodiesel, wind energy, anaerobic digestion, and bio-mass pellets has allowed Manitoba to successfully compete on the world stage. Over the next decade, our energy development plan will pump more than $3 billion into the provincial economy. This will mean significant economic opportunities for farms and rural communities all throughout Manitoba.

Clearly, there is growing excitement in rural Manitoba surrounding our promotion of alternative clean energies. Abundant land and sunshine, coupled with technical knowledge and innovation creates a winning formula for Manitoba’s future fuel sources. Over the past several years, the Manitoba government has made considerable investments in our ethanol industry. We have established an ethanol mandate to have 10% ethanol in 85% of Manitoba’s gasoline, and we are poised to have this mandate implemented in the coming years. The province has demonstrated its continued investment in ethanol production by announcing Husky Canada’s decision to build $145 million expansion to its ethanol plant in Minnedosa. The new plant will be capable of producing 130 million liters of ethanol and replacing the equivalent amount of imported oil each year. Ethanol development has the added advantage of
providing local producers with the opportunity to increase their financial yields by providing an alternate market for their crops. We know Europe has made great strides in developing its bio-diesel market, and the prairie region is quickly becoming the center for bio-fuels in Canada. Manitoba’s bio-diesel strategy includes an 11.5 cent per liter tax break on pure bio-diesel. As well, our action plan to promote bio-diesel production and use provides further economic opportunities for the provinces producers, economy, and rural communities.

Through a partnership with the federal government, Manitoba will deliver $1.5 million to support the development of community-based production facilities, which supply bio-diesel to the local and regional markets. Manitoba is currently home to two small producers who have shown significant progress, and the province is involved in actively developing bio-diesel projects that have substantial market potential. We expect to have more bio-diesel producers starting up in the next year. Additional investments are being considered to help Manitoba’s bio-diesel production. This, in turn, will help boost the profit margins for farmers in rural and in northern Manitoba.

Manitoba’s livestock producers will soon be reaping the benefits of another form of bio-energy: anaerobic digestion or methane capture. Both terms refer to creating fuel by capturing the methane gas from the breakdown of livestock manure as well as other organic feed stock The process uses bio-digesters to produce methane gas, then transforms it into clean, renewable energy. Producers can then use that energy to generate heat and electricity for their operations or for sale. Adapting these technologies for use under Manitoba conditions holds significant potential for our industry.
Wind is a growing component of Manitoba’s clean energy plan. It relays in our developing alternative land-use strategies in our rural communities, strategies that can be used to complement the province’s pursuit of clean and sustainable sources of power. When our government came into office in 1999, there were no wind turbines on the horizon. Today, Manitoba is home to a 99 mega-watt wind farm, one of the largest in the country. The St. Leon wind farm represents $200 million in private investment. Nothing makes my four-year old happier than a trip out to the St. Leon wind farm. He will stand there all day and watch those propellers go round and round and round. I understand there are a lot of other Manitobans and others, who like to take the same drive, because I know that communities in that area are now talking about the tourism opportunities that flow from wind development in their area. I have a four-year old that I struggle to keep up with because he has a lot more energy than his old man has. This project demonstrates the significant private industry potential in wind power development. And this is just the first step towards more large-scale projects—projects that will represent significant local development and provide income for rural municipalities and rural landowners. Furthermore, rural communities that invest in smaller wind projects will have the opportunity to sell small-scale wind power back into the energy grid. Manitoba has a strategic advantage when it comes to wind power.

Along with a truly great wind regime, the province has access to abundant, reliable electricity from Manitoba Hydro, which supplies the power when the winds are calm. The province and Manitoba Hydro have recently invited expressions of interest from proponents with potential wind power projects. This is part of our government’s plan to stimulate the development of 1000 mega-watts of wind power over the next decade. We can see how, with each
additional step in wind power development, the value chain grows and the opportunities for rural Manitoba to benefit from the process increase.

Bioprodcts include both bio-fuels and materials. Just thinking of bio-materials for a second, new opportunities are increasingly available for farmers to process raw materials at home, instead of exporting them to other countries and buying back finished products. As part of our growing opportunities re-organization, we have recently recruited a bio-composites engineer, working in our Agrifood Innovation and Adaptation Knowledge Center. This engineer is co-located with PAMI in Portage la Prairie.

Manitoba has a longstanding history in the manufacture of straw-based products, which include bio-composites. In fact, our province is home to the Composite Innovation Center, a joint venture between industry and government. The CIC is a center of excellence in developing and commercializing bio-composites. The facility has a bio-materials lab which focuses on developing bio-composites that are manufactured from natural fibers, such as flax or hemp. Manitoba leads the country in agricultural fiber development, and we have for decades. Currently, the province is home to a company in Gretna that makes tabletops from hemp fiber combined with poly-urethane; a company in Riverton that produces erosion-control matting out of wheat straw; a plant in Carman that extracts good fiber from flax straw, bales it, and sends it to a plant in New Jersey to make fine paper. Manitoba supports the emergence of a hemp-flax fiber sector. To this end, we are supporting the development of a dedicated hemp fiber plant in God’s country, Dauphin, to further expand our fiber market opportunities. Developing this new bio-fiber sector will take advantage of
Manitoba’s renewable agricultural resources, create new value chains, generate more jobs, and expand the rural economy.

Bio-products also include functional foods and neutraceuticals. The increasing role of technology in food production and processing, advancement in food products with health benefits, and new product developments are changing the way agricultural operations run. Manitoba currently leads the country in research on the growing link between food and health. We recognize that agriculture has an important role to play in maintaining the health of Canadians and in helping curb the high costs of medical care and treatment. As a result, Manitoba has invested significantly over the past three or four years in infrastructure for developing functional foods and neutraceutical research and commercialization cluster. This cluster is still expanding, but currently includes the Richardson Center for Functional Foods and Neutraceuticals at the University of Manitoba Fort Garry Campus here in Winnipeg, the Canadian Center for Argifood Research in Health and Medicine, in partnership with the federal government and St. Boniface Hospital Research Center, and the Food Development Center in Portage la Prairie, which just completed a $13.6 million expansion, funded by multiple levels of government, adding 18,000 sq. feet and many new capabilities to that facility.

These three centers work together to explore the link between the foods we eat and the state of our health. Our research in the area of functional foods and neutraceuticals has shown us that we can develop a wide range of products with physiological benefits that help to prevent or treat disease. This reinforces the critical connection that exists between innovative, bio-based agricultural products and fibers, and improved general health and lower health care costs.
Recent advances in technology, information, and innovation have lead to a growing number of products being farmed and finished right here in Manitoba. Our government’s investment in the expansion of the Portage la Prairie Food Development Center has made it possible for Manitoba’s own Peak of the Market gourmet soups to be manufactured here, and be available across the country. Likewise, St. Agathe is home to Associated Proteins, a successful oilseed-crushing facility, now in full commercial production, using Manitoba canola and creating rural economic and employment opportunities.

Manitoba is also a national leader in supporting ecological goods and services, or EG & S, as an important tool for enhancing and protecting our agri-environment. EG & S also ensures another source of income for farms and rural communities. For a long time now, Manitoba farmers have provided those goods and services to the public at their own cost, and everyone in the province benefits from them. The idea of paying farmers for goods and services the public want but for which there is no market, is a logical next step and it is receiving national attention. Manitoba, along with the federal government, hosted a successful national symposium on EG & S in agriculture this past February, here in Winnipeg, with 200 participants from all around the world attending. This symposium provided useful insights into how Canada should consider implementing this policy and the program. To this end, Manitoba is supporting a timely research pilot project to advance the development of EG & S policy. A three-year pilot is now underway in the R.M of Blanchard. It is the first project of its kind in Canada. Also known as ALUS (Alternative Land Use Services), this financial incentive concept is being delivered in association with Keystone agricultural producers, Delta Waterfall Foundation, and, of course, the R.M. of Blanchard. EG & S not
only offers an opportunity to protect and enhance these services for the general public, it also provides another income stream for farmers and assists in community development.

As the Minister of Conservation and Minister of the Environment, I think that is not a bad idea. The Manitoba government continues to support industry-lead initiatives that have the potential to develop new chains that create more opportunities for rural communities. Some recent activities in support of bioproduct value chains include the province’s participation in flax and the Pulse Innovation Project. These both involve industry-lead products that are developing value chains in the health, bio-material, and bio-energy sectors for agri-products made in Manitoba. Even with the budding bio-activity going on in many of Manitoba’s rural communities, there still remains much work to do. To develop these value chains so they benefit farms and rural communities, the province needs support from the Canadian regulatory system.

The current regulatory approach must be adapted to support innovation and commercial activity that will enable these value chains to be developed and to thrive. For this to happen, we need the right products produced on our farms that are then processed into new products that consumers demand. Considerable investment is now being made in research and development in these areas. But, to truly benefit from the investment, we need to be able to develop new markets and improve the distribution of product further up the value chain. We need qualified people, who are well-trained and adept, not only in the basic agricultural skills, but also in the processes that add value to the raw products and turn the product into exportable goods. We need to keep producers and agricultural professionals motivated in Manitoba and across the
country. We need to continually recruit talented young people into the expanding field of agriculture and agri-business. Here in Manitoba, we have many successful production, venture capital, business development, education, and training programs, along with tax benefits. All these initiatives encourage and support farmers and others within the industry.

It says here, “as Minister of Agriculture, Food, and Rural Initiatives?” Do not tell Rose-Ann I said that, she will think I am muscling in on her. As Conservation Minister, I am very encouraged by the progress that we have made in agriculture here in Manitoba and Canada over the past decade. I know that we have the ability to grow our agriculture industry in a broader, more innovative direction. I am excited about the unlimited possibilities that I see in the industry over the next ten years. I think that by continuing to expand horizontally, pursue non-traditional markets, and create innovative higher-level value chains, we are opening the door to new products, new industries, new jobs, and a new and richer way of life for Manitoba rural communities. I want to wish you success here at your meetings, and I also want to say, I get a kick out of being the Conservation Minister, standing in for the Agriculture, Food, and Rural Initiatives Minister. I get a kick out of being the Conservation Minister that stands in for the Industry Minister sometimes, because I think that paradigms are shifting out there.

People do not see it as the economy versus the environment any more. At least, they should not. I think that is a 1970’s kind of approach to something that has shifted in the last thirty to fifty years. I used to be a school principal. It was at the time that Maurice Strong, from Manitoba, was heading that up. I had a group of grade seven’s in little, wee, tiny Rorketon school, approach me because they
were kind of psyched-up about the environment. They had been seeing newscasts, they had watched the national news and they saw Peter Mansbridge, I guess, or maybe Knowlton Nash at that point, but, they were psyched-up about this. I quickly learned that, as their school principal, they knew a lot more about the environment that I did. They began this “Kids for Saving the Earth” club in Rorketon school. This is a little school of 154 students at the time, K-12. They began the very first recycling program in Rorketon. It is alive and well today, successful and started by these grade sevens! Not only did they know more than I did, they are now having children who know even more about the environment than their parents, who still probably know more than the Conservation Minister. That is going to drive decision-making for the next generation.

Whether you are in agriculture, whether you are in industry, whether you are in the public sector or the private sector, whether you are at the federal or provincial or local governments; whether you are a school principal or a trustee or whether you are administrator of a hospital, you go down the list, and, wherever you are at, these kids, who are now having kids, are going to be driving the agenda for the next generation. Those folks know a lot more about the environment and our economy than this Minister ever will know. And that is natural. I am confident about that. I feel good that the next generation knows more about it than I do. I am not sure I knew as much as my grandfather did, because he was a very wise person who understood how the environment and industry and agriculture were to mix together. But, I am pretty confident that the next generation is going to put a lot of pressure on all of us to do the right thing. So, I think we cannot be building up silos. We have to be looking for ways that we communicate with each other. We have to be building those
bridges between all of the groups that are making decisions. So, thank-you very much for having me.

Dean Glenn Feltham
I would like to thank Minister Struthers. It was really wonderful to hear the provinces vision on bio-products, and, once again, I would like to thank him very much for being in attendance today and for delivering what I thought was a wonderful message.
Afternoon Session

Ms. Ruth Sol  
Westac  
Afternoon Chairperson

Welcome back. Time for this afternoon’s session. My name is Ruth Sol. I am with WESTAC, based out of Vancouver. WESTAC stands for Western Transportation Advisory Council. We have members across western Canada, working in some aspect of transportation, whether they are carriers or shippers, ports, terminals, governments, or labor unions. We have long been interested in what goes on here at Fields on Wheels as it relates to transportation and some of the work that we have to do.

In reference to this morning’s session, I was a bit concerned that I did not know what a value chain bioproduct was. However, I found this morning’s session to be really fascinating and I think I am looking forward to the balance of the day. If I got anything out of this morning’s session it was John Oliver’s talk about society’s demand for sustainability. That is certainly something that I have been hearing. Talking about how Canadians are increasingly talking about the environment. He also raised the view that we have globally, that Canadians do care about the environment. That hit home to me recently at a conference that we organized in Prince Rupert. Jim Cox of the Vancouver Port Authority got up in front of an audience which was considerably older on average, than this audience, and I think this is a very good sign, of the number of people here who have not yet left their 30’s. He challenged the audience and said, “You know your children, you should be paying more attention to them because your kids
are not getting excited when you talk about jobs and growth and how important that is. They are getting excited because they want to know that the activities that they are involved in make a difference and make the world a better place.” That is something that my generation needs to remember as we are planning and going forward.

I think we heard from both our first two presenters this morning about the need to pay attention to the environment. Owen McAuley reminded us of something. He said that all parties have to benefit, all parties in the supply chain. If you are going to get support and coordination of efforts, each party has to see a benefit in what is going on. The second thing he talked about was the need for a common vision if we are going to be able to make progress. Yes, we have heard that we are a nation of ‘ditherers’. It does not mean we cannot do better. Remember that if you are doing nothing, you are doing something. You are making a choice. And if we do not develop a common vision, then government does nothing. And if government is needed to do something, then it is up to us to lead that. Owen also talked about the barriers and how industry has to make some changes. I think both speakers this morning talked about something that is unique. They said that leadership must come from industry. The transportation industry has not progressed this far. We talk about the need for leadership from government, but, I think that there is a germ of truth in that leadership needs to come from industry. The Minister at lunch said something that hit home with me and that is, in his final portion where he adlibbed, he talked about the environment and the economy not being enemies. We have to remember that.

This afternoon, we are going to turn to some of the ‘how to’s’. We are getting into putting things into practice. We have three speakers this afternoon, unlike
what your program says. Our first speaker is going to be talking about bio-energy. Our first speaker is Henry Nelson, and Henry’s biography is not in your package. I will give you a few details. Henry is director for Agri-Energy for the AgriFood Innovation and Adaptation Knowledge Center, which is part of Manitoba Agriculture, Food, and Rural Initiatives. He also has spent some time with Manitoba Crop Insurance and, also, he worked in the Sustainable Development Coordination Unit at the Mediation Board. Since May of 2002, he has chaired Manitoba’s Agri-Energy Committee. He will be our first speaker.

Then we are going to turn to our second speaker, Allen Tyrchniewicz. Allen is President of Tyrchniewicz Consulting Ltd. He has done research and specializes in agriculture and land-use policy. His research areas are: prairie adaptation policy, agricultural adaptation, water management, climate variability, and, right now, he is researching the role of bioproducts. It is very central to what we are talking about here. He also spent about eight years with the International Institute for Sustainable Development.

Our final speaker in this session before we take a break is Mr. Peter Watts, who is Director of Market Innovation for Pulse Canada. In that role, with Pulse Canada, he is charged with coming up with new value-added opportunities for pulses. He is to stimulate pulse consumption and foster research and innovation in the pulse industry. He also did an internship with Blue Ribbon Canada-U.S. Joint Commission on Grains. He spent nine years with the Canadian Wheat Board as a market analyst for some of the overseas organizations. It is a good, strong panel, and we are going to hear first from Henry Nelson.
Session 2

What’s Happening Now

Mr. Henry Nelson
Manitoba Agriculture, Food, and Rural Initiatives

Before I start, I will make one apology. For those of you that have heard me recently, the main change in what I have presented previously is this first slide. But, I do intend to, hopefully, based on the discussion today, zero-in on a few different aspects of that presentation. But, when I heard yesterday at about 4 o’clock that this might be coming up, I felt this was the most appropriate.

We are talking here in dealing with challenges and opportunities in the bio-fuels area. The way I have approached this is, in order to deal with that properly, we have to look at some of the other agri-energy areas that could be competing here. What I hope to do is look at what I think is driving this, a whole area for bio-energy. Before I get into it, I want to acknowledge a couple of jurisdictions that have done a lot of work in this, that we have been able to lean on. I received this through one of the members of our bio-diesel board, here in Manitoba. That is the city of Hamilton, Ontario, and the city of Burnaby, B.C. They have done a fair bit of work looking ahead for the next thirty years as to what sorts of things are going to impact on their jurisdictions. As you can appreciate, they are in a little more heavily populated areas, so, maybe they are looking at it in a little different light. But, I think they are jurisdictions. Hamilton, for example, claims to be ‘the electric city’. They feel they were one of the first cities to be electrified.
Where we are coming from here is, we have to look at world oil consumption. If we go back to 1945, on a global basis, we were consuming less than ten million barrels of oil a day. In the next thirty years, we increased very substantially to about 60 million barrels a day. Then, in the following 30 years, we only increased to 85 million barrels, but we are predicting that we will increase to about 120 million barrels a day by 2031. What I would see as driving that is, in that period between 1945 and 1975, that is when North America became one and two-car families. In the next 30 years, that’s when China and India are going to come on-stream as well. I think the prediction is within twenty years, China will have as many cars as the United States, and, ten years after that, India will be in the same position. That is what is driving our demand. I guess the question is, where is that supply going to come from?

**Figure 1**

The global authority on world energy is considered to be the International Energy Agency out of Paris. Every two years, they come up with a prediction as
to where we are going to get our oil reserves from. Since this last prediction, there has been a tremendous amount of debate on the reality of three of these four additional predictions because, as you can see here, our existing capacity is going to peak in about 2008 and we would get 120 million barrels a day from developing existing resources, enhancing oil recoveries, non-conventional sources, which is basically tar sands, and then, our new discoveries. Since 2004, there has been tremendous debate on the reality of all three except the non-conventional, which is the smallest one. What that is leading to is a debate as to when we will actually reach this peak oil. If you follow this, I think there was a common theory that we would not reach peak oil until 2037, or sometime between 2037 and 2121. Since that time, based on this debate, there is a growing consensus that peak oil could be reached anywhere between 2008 and 2012. We would wonder why it is so difficult to predict this, but, if we go back in the early 1980’s, there was an agreement among oil-exporting countries that they would not export more oil than their reserves would justify on a sustainable basis. You can see here that, all of a sudden, predicted reserves went way up based on two things: firstly, they were dependent on those revenues, and secondly, your reserves determined how much investment you could get. If we turn to looking at how important it is to us, you can see there is a strong correlation between energy consumption and GDP and you can also see where we fit, in North America.

Turning back to oil, 37% of our energy does come from oil and 62% of it is located in the Persian Gulf. 50% of our global oil is used in automotive transportation, and 67% in the U.S. is used in automotive transportation. Turning to home for a bit, we do produce more oil than we consume, but, under NAFTA, we can not restrict our exports. Our membership in the International
Energy Agency requires the same of us. The meaning I take from this is that we are on a global oil price. From another viewpoint, Europe has about the same standard of living as we do, and their energy consumption is about 50% of ours. A certain amount of our energy consumption is used heat, but there are parts of Europe that have heating challenges as well. I think it is something to keep in mind.

In terms of what this means, I think we can expect that prices are going to rise. It is just a matter of when and by how much. That is where I see our opportunities and our challenges. I think, as you have all heard or recognize, the bigger the challenge, the bigger the opportunity. These jurisdictions are not the only ones that are coming to a consensus that we could very well be faced with increased energy prices. The following came out in Fortune magazine. I believe it was in April of this year, where two of our leading oil investment advisors were suggesting that we could be looking at a four-fold increase in oil prices. I do not think the issue is exactly how much or exactly when, but, rather that we are going to have to look and anticipate and analyze our actions in terms of a potential increase of this magnitude. There are others, of course, that are recognizing it as well. We have to start thinking in terms of some of our core values; the way we do business; the way we live. I think we will have, and we will go through each of these options and I will touch on each of them here. But our options are fairly obvious: we can switch to other energy sources, we can improve some efficiencies, but I think, ultimately we have to reduce or change the way we do business to reduce our consumption.

Turning, first of all, to the other sources: we mentioned the oil sands. I think one thing that we have to remember here is that the energy that is required to get the
oil in that situation, requires natural gas, which, I understand has peaked in North America in 2002. You can ship natural gas by boat, but I think you require a two-mile free zone, for safety reasons, and then, you must find a place to dock the ship that has the insurance to take on a load like that. In other words, it is very expensive to import it. The other thing about the oil sands is the water that is required to get the oil. I know we do not want to export water, but, if we use the water in order to get the oil and we export the oil, we are, in effect, contributing water to that export. With natural gas, there is limited development, and with coal we have to deal with the emissions. Nuclear, even if you can technically manage the waste, is going to be expensive. With hydro-electric there is obvious potential. But, again, we have probably tapped into the most available resources in that area. Expansion is expensive, but it has potential. That is why we talk about other sources. I did not mention hydrogen because it is not actually a source; it is a form, albeit though, a very advanced form. One of the things that we did see when we were down in the U.S. was some work using wind power to develop the hydrogen. I think it is something that holds potential, but it is a little ways down the road.

If we just take a look quickly at some of our demand in Canada, based on Natural Resources Canada information, you can see our demand for energy in Canada for fuels is in the light-duty vehicles primarily, followed by the trucks, then air, and so on. There are a couple of things here. Obviously the two big users are light-duty vehicles and trucks. I think the other thing that I take from this slide is the rate of increase in each of those is very significant, and more so, with the possible exception of air, but rate of increase and the magnitude of them is very significant.
Turning to Manitoba for a minute, if we look at our consumption here by fuel type, it is gasoline followed by distillate or diesel, jet fuel, and so on. Again, the same sort of a trend, in terms of quantity and the increasing rate of consumption. On another basis, if we look in Manitoba at the type of energy that we use in industry, we rely on electricity, natural gas, and refined petroleum products. You can see that we are heavy users of electricity. The other significant ones, are natural gas and refined petroleum products. In agriculture we rely on electricity, but, to a large degree, on refined petroleum products. The only comment I would have here is that no doubt our fertilizer requirements appear in the previous one, under the natural gas industry. I think it is fairly clear from these slides, where we need to concentrate.

If I could turn just quickly to the bio-fuels, and give you a bit of a sense as to how much of this can be addressed through our bio-fuels. In a perfect world, a bushel of wheat (and I know I am using mixed units here) yields about ten liters of ethanol and a bushel of canola, under good high oil-yielding and a good
extraction, get close to ten liters of bio-diesel. What we have to keep in mind though, is, on a unit basis, we are getting almost twice as much energy on a liter of ethanol as compared to a liter of bio-diesel. That comes back to the energy balance. You can see here that there is always a debate around the energy balance with ethanol. The general consensus is that we get more out from what we put in. Although, it is going to vary. You can see good arguments for less than one to two times as much energy out which all depends on the assumptions you are going to make on yield and transport distance to the plant and the technology that is in the plant, and so on.

You are looking at getting more than just energy from that product. But, when it comes to bio-diesel, it gives out a much better energy balance. The general rule of thumb is that we get a little over three out for every one in when we make bio-diesel from canola. If we make it from animal fats, we are getting six or seven out. There is a very good energy balance there. I do not think I need to go through the reasons why. Bio-diesel, for example, is more bio-degradable than sugar and less toxic than salt. We have a number of advantages here that I will not belabor.

In terms of the impact that we can have with the bio-fuels: ethanol with a 10% mandate requires about 130 million liters of ethanol which would require 13 million bushels and, depending on what you want to assume for an average yield, the average yield of hard red spring wheat in the province is about 33 bushels, but, as we have talked about earlier, you can get significantly higher yields with other types of wheats. That gives you an impression of the type of acres we are talking about. We still have about just around the three million
acres of wheat in Manitoba. Assuming a 44 bushel yield, the 10% mandate would require about 10% of our acres.

I will not go into our bio-diesel program. We have a fair amount of information on that. We have the ten-point action plan that the Minister mentioned earlier. A big plank in that is the 11.5 cent tax advantage. We have the capital support program that we have through MAFRI. We are working at getting research into varieties and improved feed stocks, not only in bio-diesel, but also in wheat, as well as looking at the use of animal fats. We also are doing some work in bio-diesel positioning the product in the marketplace. We have a long-haul trucking demonstration where we are looking at the impacts of bio-diesel on the engines. We are doing a number of things on bio-diesel that we think will help start it and we are working with the federal government on the Renewable Fuel Standard policy. In terms of Manitoba, we consume about 850 million liters of diesel fuel on an annual basis. We have about 2.5 million acres of canola in Manitoba now, and at 30 bushels an acre, that is an average yield in Manitoba for canola, using the 10 liters per bushel, that would give us 300 liters per acre. If we took, and I am not suggesting for a minute that we take all of the canola and convert it to bio-diesel, but if we did, we could produce about 750 million liters of bio-diesel.

Something else that bares mentioning here is the fact that of that 850 million liters, we consume about 300 liters of it in agriculture. In terms of a market, that is a place we can look because it is used primarily in the summer. And one of the challenges with bio-diesel is the cold weather properties. Although canola has probably one of the best cold weather properties of any bio-diesel type, it still does have some challenges. We certainly would not have it in the agricultural market. The other thing to keep in mind is, not only what we can do in terms of
producing into markets like this, but, for us in agriculture, is there anything we can do about reducing that demand. I will talk about that later. What I see are opportunities here in agriculture in the energy field. Of course, we are capturing solar energy by storing it in plants and then converting it into bio-fuels, as we have just discussed. We can, of course, store that solar energy in batteries. There are passive ways of capturing solar energy using air circulation through south sides of buildings before you bring it in and heat it up.

The other big area that agriculture becomes involved in in agri-energy is, we do have the land base, or managing the land base, where we can capture things like wind. Manitoba is looking at opportunities for wind with large wind farms. Hopefully, there will be potential. There are community wind-type projects that we are studying in other parts of the world and, hopefully, we can capture some benefits there.

Another area that was mentioned earlier is anaerobic digestion, if there is a way of converting that bio-mass. We saw several examples of it in the U.S. We have had people going over to Europe to look at anaerobic digestion. We have a couple of challenges in that. Number one is our weather. Number two is when we produce energy in alternate ways, we are competing with our hydro in Manitoba. But, I think we are looking at it less and less as competitive. We are starting to look at the additional advantages of producing energy in these ways as we look at the advantages that we gain in possibly odor control, and certainly in nutrient management. There is a fair amount of potential there. We have plans to work with producers that are looking at anaerobic digestion as a manure-management tool and as a potential for producing energy, not necessarily to produce it in electricity. We can capture that energy in the form of
heat or electricity. The most efficient way is to capture it as heat. Depending on the heat requirements of the farm or the other operations that surround that farm, we may be able to capture most or all of it in the form of heat. That works in the winter, but not so well in the summer. There may be ways that we can convert some of it to electricity to use it for cooling and so on.

Bio-mass. That was mentioned earlier, as well. We have a fair amount of work using bio-mass as heat. As was mentioned earlier, we have a bio-product specialist now working with the department. We think there is a tremendous amount of opportunity and work to be done in this area. And, geo-thermal, of course. We are a leader in urban areas in geo-thermal, but I think we have to look at the opportunities in agriculture for geo-thermal.

I have talked a little bit about the options. I have talked about some of the alternatives and some of the efficiencies, but we need to look at some ‘no regrets’ sorts of moves that we can do. I do not think there is any point in debating when or how high fuel prices are going to change, but it is productive to spend time looking at what sorts of energy requirements we have in our current production models, marketing and distribution. I think we are going to start, as we see or anticipate energy prices, fuel prices in particular, rising, looking at the gallons of fuel it takes to produce either a bushel of grain, a pound of beef, a liter of milk, and so on. Through that, we will start to look at models. We have to look beyond what is taking place in the U.S. and even in Europe. We have to look at other jurisdictions that maybe have taken other approaches, and look at what models they have come up with to see if there are not options for us in those areas.
As an example, I have seen quotes where it takes anywhere from a half to one gallon U.S. of fossil fuel to produce a pound of beef. We are dealing with a ruminant. I think we have to ask ourselves, how many pounds of fossil fuel it takes to produce a pound of venison. I am not suggesting that we can be that efficient, but, how close can we come to that. I think we are going to move through this in, what I call, the four ‘A’s’. First of all, we are going to be aware of a potential challenge. We will all go through sort of a denial stage. We have to accept it. I know, when I went to school in the late 60’s, we were told we were going to run out of food and energy. We are still driving and eating. I do think we have to get past that stage before we will actually start looking at analyzing what we can do before we can take any action. But, whatever jurisdictions do that, they will be the ones that are in place to produce energy; they will identify new models, and have new concepts to market.

I am going to leave that part of it at this point. I do agree with Mr. Oliver’s comments about the building blocks. I would like to suggest that somewhere in there, we are going to have to, because I think it is going to be a global issue, dealing with this finite supply of fossil fuel. It is a fundamental change and it is going to affect the way we live and the way we do business, in particular. I think I will leave it at that, Ruth. Thank-you.

Ms. Ruth Sol

Thanks very much, Henry. I think that has given us a really good base of understanding of just how broad this whole field is. I know that if oil goes to $262/barrel in my world, I will be making some choices pretty fast. But, you do need to understand that when you start looking at producing a bushel of wheat or consuming a pound of wheat those are some interesting questions that are
going to come, maybe not so much to us, but to our children, who will be making those choices. That gives us a good basis to understand the next piece.

Now, we are going to turn to Allen Tyrchniewicz who is going to talk specifically about ethanol. This is something that most of us have heard a lot about, but, if you are anything like me, you do not know as much as we should know about it. Please welcome Allen Tyrchniewicz.

**Mr. Allen Tyrchniewicz**  
**President**  
**Tyrchniewicz Consulting**

I would like to take this opportunity to thank the organizers. I think this is a very interesting switch for Fields of Wheels and it has been quite interesting to see where we have gone with the discussions here.

What I am going to talk a little bit about a project I did in conjunction with the Supply Chain Management department at the Asper School of Business. Together we looked at the role of bio-products and value chains and how they operate, given our current business and policy issues. Subsequently with that, this report was done essentially for Industry Canada and BioProducts Canada; however, it was BioProducts Canada who really lead the way for this report.

Instead of getting into the details of the report, I am going to focus on the case study, which was ethanol. I think we have seen most of these already throughout the day. Why we want an interest in the value chains; the cleaner environment; different sources of income. But there are a few things which we
have not talked about that are relevant here. One of them is, fewer regulations associated with non-food products. It is changing a little bit, but there was a time when Dick Dawson, at the time VP of Cargill, came to me and said, “you know, it is hard to make money off of food. It feels like you are taking it from peoples’ bellies.” However, if you can create a product that is not in that sort of necessity market, that is where you can make some good money. I think that is one of the things that we should be looking at when we think about the bio-products. We are outside of the food realm in some of these, in which there is money to be made.

The other thing, looking at value chains, particularly efficiently operated ones, you have more control over your product, particularly with the inputs coming into it as well as the products coming out that can be fine-tuned for your consumer. In the case of ethanol, you have also got some very interesting co-products, such as distillers’ grains that can be used in the feed industry, and vinegar, and a few other things that are quite valuable. One of the facts about the ethanol industry in Canada and the U.S. is that there is a lot of public policy intervention. I am not saying that that is a bad thing, but I think we do have to recognize, with any public policy we have to make a decision. Is it something we want to have sticking around with us for a long time? Or is it something to get us to where we want to be and then it slowly fades off?

Another point about ethanol is that there are multiple drivers which I will get into a little bit later. I am also going to touch on where we are with some business models. They differ between Canada and the U.S. and I think there are some important points to grasp. I have already mentioned that ethanol is rich in co-products. In terms of public policy, we have got tax concessions, which I
think you are all quite familiar with, the mandating abuse of ethanol and other things that have taken place, such as financial assistance. However, some of these later ones are going to have more of an impact. They include public education programs, public goods consideration. In this case, I am talking about some of the other benefits of ethanol that are not necessarily related to energy which I will get into in a little more detail. One of the things coming up is reduced emissions of greenhouse gases. Given where we are in Canada, it might be an appropriate topic. Then, we have a decision to make. Do we want ethanol to be demand-driven? Is it an issue of being supply-driven? Or, is ethanol one of those things that is public policy-driven? Right now I would say that we are probably closer to public policy-driven than we are to demand or supply-driven. I would also add that what we would like to see happen is moving towards a demand-driven situation.

In terms of Manitoba, there are a number of examples of public policy intervention. I think the first point still stands that there is a rebate of 25 cents/liter. We have also mandated the use of 10% ethanol blends on 85% of the gasoline sold. Initially this was supposed to occur in 2005, but because we did not have the capacity, it has been postponed until the Mohawk facility is up and running in Minnedosa. There has been a fair bit of research in terms of development to feed stocks and the co-products as well as some interesting work done with the ethanol office to coordinate parts of the development. That is some of the good activities that can keep people or, at least these ideas flowing in the right direction if you have some form of coordination. As well, there have also been some efforts to promote Manitoba ownership, and, again the public awareness aspect of it.
I mentioned earlier that there are different drivers. In the U.S., one of the key drivers is reducing its dependency on foreign supplies. In Canada, we are an exporter of our fuels so that is not necessarily a big deal for us. However, rural development and diversification is. We have new products for agriculture commodities which again is another important component for us. I think one thing that we can probably hang a hat on right now, given with climate change and some of the discussions that have recently taken place is that, ethanol does promote the reduction of greenhouse gas emissions. Furthermore, this comes back to one of the points Henry made, in terms of how valuable is ethanol to us. If we look at ethanol from the standpoint of energy replacement, it is not very good. Bio-diesel seems to be far better. However, if we look at ethanol as a way to reduce our greenhouse gas emissions with a 10% blend, now it is looks quite positive. We have to factor in some of those sustainability and environmental issues that have not been there in the past.

I mentioned earlier that the business models differ between Canada and the U.S. Some of the models used in the U.S. are partnerships and co-operatives. In Canada corporations tend to be the main wolf, or at least the direction for Canadian ethanol production. In the U.S. there is also a new one. New generation co-ops. In Canada, we have got a couple of key players. I think Husky Energy is one of our big ones now with capacity of around 260 million liters when you combine the Lloydminster and the Minnedosa plant, after it is up and running. You have got Poundmaker. But, in the U.S., you have got a number of different approaches with co-ops that I think are quite valuable for us to look at as we think about expanding our own industry. For example, Chippewa Valley Agrafoods Co-operative has 650 shareholders, who mainly consist of farmers, elevator companies, and some private investors. It is a
relatively small facility with, I think, 20 million U.S. gallons of ethanol annually. For a U.S. plant, that is small. However, for a Canadian one, that is rather large. Dakota Ethanol is a form of a partnership that is taken place between Lake Area Corn Producers Co-operative and some of the other companies in the area. You have got Badge State Ethanol, which is another business model looking at limited liability company, which is quite similar to the new generation co-ops right now, in terms of the way it functions. One of the key things there, is that as a member, you are required to sell to the co-operative, but, as the co-operative, you are also required to buy from the member. So there are some good approaches to value chains that are taking place on that front. I think that one of the other key points is that, currently the U.S. value chains seem to be fairly strong compared to the Canadian system.

**Figure 3**

**Basic Ethanol Value Chain**

That was a little bit of the history. Now, what I want to do is give you an idea of a basic ethanol value chain. It is quite basic. This slide includes some of the inputs that you would see. But, I wanted to give you an idea of the different
players that can take place in this. There are a number of arrows on that. I think that the key ones to pay attention to are the movement of ethanol, which you can see in the dotted blue line up at the top, the movement of distillers grain, the movement of fertilizer and grain into different areas. Some of those represent inputs in, others are some of the outputs that are going back into the chain. To give you an idea of sort of how they are inter-connected. It is not just a simple linear progression through the chain. There needs to be a certain amount of feedback on the system as well, too.

One of the things that we were asked to look at in this study was, what some of the factors for success for a value chain are. We looked at a couple. It is interesting because mission and strategy is one of the first ones that pop up. And I think Owen really made that point this morning when he talked about the need for a shared vision. It is the same thing with a value chain: all the partners within the value chain need to share a mission statement and the strategy on how they want to move forward. Another key component for a successful value chain is the partnership. All the partners need to feel part of the value chain. In the Canadian example, when we look at ethanol, it is really the grain farmers who are supplying, at market cost essentially, to the ethanol plant, and not necessarily part of the price-setting or that much in the way of what type of product the ethanol plant needs. When you start getting those discussions taking place, it strengthens the chain and it also makes for a more profitable enterprise. Owen also pointed out one of the key problems with ethanol and that component, is that, right now it is very difficult for the farmers to produce the type of grain that the ethanol plants want in an efficient manner. Those grains are not available to us right now in Canada.
Another aspect of the value chain that was mentioned this morning was leadership. It does not really matter where that leadership comes from, per se, but it does need to come from within the value chain. It could be at the farm level. It could be at the ethanol production level. It could be further down the chain. However, you do need to have a leader within the chain for it to be efficient and for it to be successful.

I think it is important to recognize the customer focus of a value chain. Within a value chain you have a number of products coming out of it and unless you have a good handle on what the customer truly wants, it is difficult to meet their needs. Therefore, it is important that there is a relationship between the customer and all members of the chain because their products have an input into the chain, as well as, impact upon the quality of the final product.

Another important aspect that we found in our research was that the product process itself needs to be shared with all members of the value chain. There are a number of aspects within the process that do have an impact on quality. It is important that all inputs going into that process fit within the goals of the chain, as well as, where you want to go with the final products.

This one has been talked about a little bit. But I think we have some more opportunities here to discuss it. On the financial side of things, ethanol value chains have a bit of a problem. It is a bio-product, and, as a result, our current financial institutions are not quite willing to take on the bio-products in the way that they are with other products. There is a dependency on weather, that raises a new risk in any bio-product and I think farming has certainly felt that. But, that is going to be the same impact that you are going to see on the ethanol
production, as well. One of the things that we found in our research was that a lot of investors were looking for internal rates of return of up to 20% for ethanol production facilities. Those were not low numbers; those were significant numbers that make it quite difficult to borrow money.

Finally we have policy drivers. I have talked a fair bit about that already so I am not going to go into too much detail. However, when you look at your value chain, you need to look at what are some of the policy implications of your chain and what are some of the things going in the policy world that could have an impact on where you want to go. Some of these were mentioned already in terms of the policy around the production of new wheat varieties.

The other thing that we were asked to look at were some ways of analyzing a value chain from a cost perspective. First of all, I would like to credit Allister Hickson who was key in developing this idea. Looking at some of the key activities within a value chain, we start with the acquisition process. Essentially this is the process of finding the inputs and delivering the necessary inputs into the chain.

The next phase is looking at transformation. This is the process of using the inputs and converting them into a product. The final component is disposition of the waste and distribution of your product. How does this look in an ethanol model? The acquisition costs will be things like getting the grains, the enzymes, the water, processing equipment, and energy. On the transformation side, you will be looking at labor costs, waste management, repairs, maintenance, general and administrative expenses. This would also include if you would taken out loans, expenses along those fronts. On the distribution side, it will be the process
of passing the ethanol on to the end users. There will be ethanol, the carbon dioxide, distillers’ grains, and some of the other outputs. Within that, you also have the cost of dealing with the waste material. It becomes a fairly inclusive chain once you start looking in depth.

What we did, was look at a model that would look at the acquisition costs, the transformation costs and the distribution costs for the carbohydrate, which in this case is the ethanol bio-products. We then compared that to what it would be at a hydro-carbon level. Looking at their acquisition costs, transformation, as well as, distribution. One of the things that we added into the model was the sustainability component. Just looking at the cost model you would not catch some of the benefits received from reducing your greenhouse gas emissions, for example. That is a value that is taken off at the carbohydrate level.

**Figure 4**

**Ethanol Value Chain Formula**

\[
\text{Cost (A)} + \text{Cost (T)} + \text{Cost (D)} \leq \text{Cost (A)} + \text{Cost (T)} + \text{Cost (D)},
\]

\[
\text{Ethanol} \quad \text{Gasoline}
\]

\[
0.49/\text{litre} + 0.20/\text{litre} + 0.01/\text{litre} \leq 0.30/\text{litre} + 0.45/\text{litre} + 0.05/\text{litre}
\]

Assumptions:
- prices based on 2003 numbers
- gasoline = $0.80/litre

These are some of the numbers that we came up with. Looking at the ethanol versus gasoline (there are a couple of assumptions in here; one, we were using numbers from 2003). One of the things that we found quite difficult was finding
some of the numbers out of the Canadian gasoline production. Therefore, what we have done is use U.S. numbers and assumed that what they were doing was quite similar to what was going on in Canada. Essentially what you see here is that the ethanol cost was a little lower than the gasoline, which was 80 cents per liter. The ethanol, in this particular case, worked out to about 70 cents per liter. This is just looking at one small component of the chain. It is just looking at this area here. So, we have not taken this back to look at the fertilizer inputs or some of the grain production, etc. That is something for further study. But, it does give us a handle sort of on this area here, and what that means.

Finally, a few points on what we thought were considerations for success with ethanol. One of the first points that we determined, is that you need to have a well-capitalized financial structure. We need to have good local leadership, preferably within the vicinity of the plant. As well, I think this was one of the key components, particularly if you get away from the corporate models and move into the partnerships of the co-ops; you need to have excellent management skills and it also needs to complement with local skills. There needs to be a stability of supplies as well as a market for the co-products. The fluctuation of gas prices makes this a very difficult one for ethanol to necessarily remain the best use of resources. With the appropriate markets for co-products, it does balance it out, that ethanol does become a viable resource.

Ms. Ruth Sol

So, lots of problems but obviously lots of work going on in the background and some of the solutions are there. I think they are picked up in a lot of other industries, as well. So, that concludes the piece on the energy bio-products.
Now we are going to have a little change of pace. We are going to talk about pulse crops. I would like to introduce Peter Watts, Director of Market Innovation for Pulse Crops Canada.

Mr. Peter Watts  
Director of Market Innovation  
Pulse Crop Canada

Good afternoon, everyone. It is a pleasure to be here. I see a few familiar faces around the room, some of my former Wheat Board cohorts. Unfortunately I was not here this morning, which is unfortunate because Ruth said she learned what a bio-product value chain was. And I wish I had been here to figure that out because it is kind of complicated, this value chain business. I was also noticing on the luncheon menu that there was a basket of fresh baked breads and butter, at the beginning. We had our wheat and our dairy. There was beef and barley soup and there was barley. We had poultry, there was chicken and wild rice and vegetables. I am sure there was some canola in there somewhere. But, there were no pulses. So, I was thinking, we are not doing our job very well if there are no pulses on the menu.

I have entitled my presentation today, Canada’s Pulse Revolution. I do not know quite why I did that. But, as I was developing the presentation, I realized that there have really been a lot of changes in the pulse industry over the last fifteen years. It really is a sort of a nascent and emergent area. So, it struck me as somewhat appropriate. I am going to talk today initially about some background statistics about pulse production in Canada, which I hope you will find interesting and I hope that it is interesting and maybe not entirely aware of.
Then I am going to talk about the Pulse Innovation project primarily, that we are working on now at Pulse Canada which I am involved in.

So, let us start with some basic information. Pulses include peas, beans, lentils, and chickpeas. Pulses are the dried seeds of legumes or podded plants. This sometimes includes soy beans would be included in the definition of pulses. It is a little bit of a gray area. There are also other pulses. But, Pulse Canada is responsible for these four pulses, peas, beans, lentils, and chickpeas. You have got on the left the peas. We have yellow and green field peas grown in Canada. In terms of the beans, we have navy, white beans, pinto beans, black beans, kidney beans, cranberry beans, pink beans and probably more. As for lentils, we have large green, medium green, small green lentils, and red lentils.

Pulse production in Canada has really risen dramatically over the last fifteen years. You can see in the early 90’s, there was less than one million tonnes of pulse production in Canada. Today, there is over four million tonnes on average over the last few years.

**Figure 5**
The bulk of which is pea production as you can see in the blue. Lentils are the second-largest crop, and then beans. Chickpeas are the smallest component.

**Figure 6**

Right here in Manitoba, we grow between 100,000 and 250,000 tonnes of beans every year. We are the largest bean producing province now in Canada, ahead of Ontario. We export a lot of those beans because we obviously cannot eat 250,000 tonnes of beans here in Manitoba. In terms of provinces and who produces what, Saskatchewan is the biggest producer of pulses. They are followed by Alberta and Manitoba and Ontario. Saskatchewan is producing about 75% of the pulses that are grown in Canada, compared with other crops, such as wheat, barley, canola, corn, pulses, and flax. Those are the six lines that you can see there in order. Apart from canola and, to some degree, corn, pulses have seen the most significant growth on the prairies or in Canada. As you can see, the second from the bottom line, about a five-fold increase over the last fifteen years. A really big surge in production in Canada in terms of pulses as farmers have tried to diversify there crop base and look for new opportunities.
In terms of the world, these are last year’s production numbers. That was a record crop for us last year at 4.8 million tonnes. You can see that India is the biggest pulse producer in the world. Canada is now number three. That compares to about number 43 in the early 90’s. So, we’ve really come a long way in the last little while in the pulse world.

Along with the increase in production, our exports have grown dramatically from around 500,000 tonnes in the early 90’s to around 3.5 million tonnes last year. Canada is now the dominant player in global pulse trade. We are the major player in pulse trade in the world. In terms of exports, these numbers are from 2004. I took them from the FAO. I am not sure exactly how accurate they are, but Canada was almost 50% of global pulse trade last year. In terms of lentils, Canada accounted for over 31% of global lentil trade. How many of you knew that? Lentils always seem kind of exotic, but, Canada is the world’s largest producer and exporter of lentils. That includes both green and red lentils. This is just the pulse statistics overall. Canada accounts for 27% of global pulse trade. We are the largest single exporter of pulses in the world, by far.

Figure 7

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<th>2005-06</th>
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<tr>
<td>Pea prices = $3.50/bu</td>
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<tr>
<td>Average Yields = 40 bu/acre</td>
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<tr>
<td>Revenue = $140</td>
</tr>
<tr>
<td>Costs of Production = $190</td>
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<td>Profit/loss = - $50 per acre</td>
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In Canada and globally, pulse prices have taken a hit. This is a price slide that shows Canadian yellow peas delivered to a plant in Saskatchewan taken from Stat publishing. You can see last year, these are yellow pea prices, this is food-grade peas, and you can see the prices were around $3.50 per bushel there for a while last year, compared to obviously some much higher prices in the past. Same thing, this is a lentil price slide. You can see that lentil prices lentils got down to about 10 cents per pound.

With the increase in production in Canada and abroad, we have really seen the commoditization of pulses which is creating problems for Canadian pulse producers. It begs the question, “are we going to continue in the expansion of pulse production in Canada, or is that going to level off with this kind of price level?” You can see a little jump in prices there, at the end. A lot of you probably know what is going on with commodity prices right now, with one of the most severe droughts on record in Australia. Australia’s wheat production is estimated, as of yesterday, at 9.6 million tonnes. That is almost a third of what they have been producing in recent years. And commodity prices have really taken off. Hopefully, pulse prices will be pulled up along with them. However, it has been a grim couple of years for Canada’s pulse producers, particularly peas and lentils. I just did a quick cost estimate here. This is just very rough numbers. Last year, at $3.50/bushel for peas, if your average yield was 40 bushels/acre, which is a little bit above actually what the average was, you’re revenue would be about $140.00 and your cost of production, around $190.00. So, you had a net loss of $50.00/acre. As you can see, not a very sustainable production model.
What are we going to do about it, as a pulse industry in Canada? I work for Pulse Canada. The members of Pulse Canada are the pulse grower’s associations across Canada, of which there are five: the Alberta Pulse Growers, Saskatchewan Pulse Growers, the Manitoba Pulse Growers, and the Ontario White and Colored Bean Growers Associations. The Canadian Special Crops Association, which represents the traders and processors of pulses, are also a member of Pulse Canada.

Pulse Canada was created in 1997 to represent pulse grower interests across Canada. The first area of activity was the area of international market development work: promoting Canadian pulses abroad, improving market access, doing market intelligence work, etc. So, that’s been sort of the mainstay of Pulse Canada’s work over the last ten years. The Canadian Special Crops Association that I just mentioned is now a partner of Pulse Canada. We are now actually one organization and just merged this year. Their work is oriented towards trade arbitration, transportation issues, and they organize an international conference here in Canada. We have a reduced risk management strategy: pest management, input regulations, etc. We have a person that focuses on providing that information to producers to ensure that we have the best possible access to our international markets. Most recently, just in the last year and a half, we have started two new projects. One of them is the Pulse Innovation project, which I will talk to you about now, focusing on new market opportunities in North America. We also have a feed pea network. Somebody working at Pulse Canada focusing exclusively on opportunities for feed peas in North American and abroad. That is the brief overview of Pulse Canada and how the Canadian Pulse industry is set up.
The Pulse Innovation project that we are working on now at Pulse Canada, I just put a little quote here to describe it, “it is to develop new value-added opportunities and strengthening value chains for Canadian pulse crops in the North American food market with a focus on nutrition and health.” We are looking at research, communications, and marketing activities that we need to implement, as a Pulse industry, in order to improve our opportunities and access to the North American food markets. In particular, the Pulse Innovation project (PIP) has two major deliverables. One of them is a industry strategy that we are working on right now to be developed for Canada’s pulse industry, vis a vis the North American food market. The other big deliverable is human clinical trials. Some of the money that we got from Agriculture Canada for this project is to fund human clinical trials looking at the relationship between pulse consumption and the prevention of chronic disease. I am going to talk about those human clinical trials this afternoon because I think they are very important.

Why the North American food market? Well, it might seem pretty obvious, but it is important to say why we are looking at the opportunities here. Obviously a huge affluent market, 330 million consumers in North America. With the increase in transportation costs that we have seen over the past couple of years, looking closer to home makes a lot of sense. There is a limited awareness on the part of North American consumers and the food industry and the health industry vis a vis pulses and their beneficial attributes, not only from a nutrition and health perspective, but also from a function and application perspective. Low per capita consumption in North America and rising demand for nutritional and functional foods in North American are creating opportunities. That is why we are looking at this particular market. Pulse attributes are well-suited to the demands from the North American marketplace for health and nutrition. It is
kind of hard to see the breakdown, but, that graph shows you an approximate breakdown of a pea into its macro-nutrients. You can see that about 50% of a pea is starch and 15% is fiber, and 25% is protein. So pulses are very high in protein. Beans and lentils would be a little bit higher in protein than the pea, and, of course, very low in fats and sugars. So, this makes them ideally suited for some of the chronic conditions that we are facing in North America. The Mediterranean diet was mentioned earlier today. I just wanted to put this up here. You have all probably seen the Mediterranean diet pyramid, but it is interesting to note that pulses and beans and legumes are right at the heart of the Mediterranean pyramid. It is kind of the heart sustaining the pyramid.

I mentioned before that pulse consumption was low in North America. This is from the FAO, 2002 data showing a caloric intake in general. You can see here that pulses are very low, less than 1% of our caloric intake in the Western or developed world comes from pulses. It is about triple that in the underdeveloped world. Of course that depends on which country you go to. If you go to a country like Burundi or Rwanda, people are consuming upwards of 40 kilograms of pulses per year compared to North America, where we are probably hovering somewhere around two kilograms per person per year, or around ½ cup of pulses per week. You can see, compared to cereals there, which are up over 30%, and meat, which is around 10% of our caloric intake. It is a great opportunity here for us to increase production.

I just want to talk about the Pulse Innovation project itself and what we are doing. It is a three-year initiative started in April of 2005. This is a schematic of the organization of the Pulse Innovation project. I want to draw your attention to the right hand side. We created three expert advisory groups to help us in the
development of our industry strategy and action plan in the areas of nutrition and health, in pulse fractions and the component parts of fractions; proteins, starch, fiber, and whole pulses.

We created expert advisory groups and we went out to researchers and the food industry and the government and we asked the experts in the area, or that might be interested, if they would help us by sitting on one of these committees. The response was phenomenal. We got representation from a great cross-section of people from the food industry, you can see on the left-hand side there, we have a number of multi-national companies that are sitting on our committees, such as Kraft, General Mills, Heinz, and Archer Daniels Midland. We have major important Canadian companies that are involved: Agricore United, Rob Tisdale is sitting at the back of the room I see there. We have the Canadian fractionating or processors of pulses like InfraReady Foods in Saskatoon, Parheim Foods, NutraPea, Best Cooking Pulses. We have research institutions from across Canada and the U.S., health organizations like the Dieticians of Canada and Canadian Diabetes, Health Canada, government participation from across Canada and the U.S. and we also have a strategic alliance with the Canadian Agricultural Policy Institute. The participation in the Pulse Innovation project has been excellent. This is the beginning of the kind of strategic partnerships that the pulse industry needs to form in order to develop its strategy. We are already creating those partnerships, but we need to go a lot further.

So far, we have developed a draft strategy for the pulse industry. We still have to go out and do a lot of the work developing the tactical areas. But, we have four strategic thrust areas that we have developed for Canada’s pulse industry vis a vis the North American food market. The four areas we have identified are,
providing research leadership, engaging the food industry, advancing Canada’s pulse industry, and transferring knowledge to consumer gatekeepers. I think they speak for themselves, but I will just go through them quickly. Providing research leadership; the Canadian pulse industry needs to figure out what our research priorities are, communicate those priorities, and how to get more investment in pulse research, whether it is in health and nutrition, or in pulse functionality and applications. Secondly, we have to engage the food industry; we have to get out there and find out what the food industry is interested in, what are their barriers to using pulses in their food products, what are the aspects of food products that are marketable, and figure out how pulses fit into those products, and really engage them in a dialogue to get them involved in funding research, as well. Advancing Canada’ pulse industry and figuring out what Canadian pulse processors and traders have to do to get their products into the food industry, so that they are prepared. Right now, Canada’s pulse processors really are not set up well to access the North American food markets. Lastly, to transfer knowledge to consumer gatekeepers; what we mean by that is, we need a good communication strategy. We have to make sure that the health professionals, media and food writers, the food companies, and everybody who is influencing consumers’ decisions vis a vis their food choices, are aware of the nutritional benefits of pulses and the opportunities to use pulses in their food products.

Through each of those four pillars or four strategic thrusts, we have research and communications and marketing aspects that have to be developed. That is where we are at right now with the Pulse Innovation project. We are going out and we are meeting with the food companies and the researchers, and government and other industry players, and trying to figure out exactly what the tactical and
specific measures and action plans that are going to fall under each of those strategic areas. In terms of our long-term outcomes and objectives from the Pulse Innovation project, we want science-based evidence that links pulse consumption to specific health outcomes. We want science-based evidence of pulse functionality and applications and food systems, and improved technology related to pulse processing. Of course, we want more food products made with pulses and we want increased consumption of pulsed in North America. Right now, as I mentioned, we are consuming about $\frac{1}{2}$ cup per week in North America. The USFDA recommends 3 cups of pulses per week. Make sure you are getting your 3 cups of pulses per week.

I am just going to finish off here and talk quickly about our human clinical trials. The Pulse Innovation project has currently announced five human clinical trial projects and we are going to announce the sixth. Each project is worth about $250,000 in total about $1.5 million. We have top researchers from across Canada, and one from the U.S., doing these research projects. They are looking at the relation between pulse consumption and the prevention of chronic disease related to obesity, heart disease, and diabetes. I am not going to go through each of these projects individually.

Why are we doing these human clinical trials? We need strong clinical trial research to get noticed in the pulse industry. Messages that are developed on evidence-based results have been proven effective. Industries like the soy industry and others in the U.S., have invested a lot of research time and it has paid off. Not just from a food product development perspective, but they have actually achieved health claims that have helped boost consumption of their products. Health professionals and government do demand strong evidence. If
you are going to go for a health claim, you need to have research that has been done according to U.S.FDA, and Health Canada standards. An example of an outcome that we might achieve from the pulse industry through these studies, are things like a pulse-specific health claim like ½ cup of pulses can lower cholesterol. Or, as part of a healthy diet, pulses can help maintain a health body weight. Or, you could have a specific structure function claim, such as, as part of a health diet, 10 grams of pea hull fiber can help promote bowel regularity and maintain a healthy colon. These are the types of claims or specific structure function claims that may come out of our studies.

I want to show you one example. In 2003, the almond industry in the U.S. secured a health claim through the USFDA that said something to the affect of consuming almonds and other nuts in conjunction with a low-fat diet lead to a reduced risk of heart disease. You can just see in 2003, almond consumption jumped by nearly 50% in one year. This is just an example of the kind of success some industries have realized through investing in clinical research.

Finally, in terms of bio-products, the Pulse Innovation project is focused on food and opportunities in food, whether it be for whole, split, canned, flour, fractionated pulses, as I mentioned before. We have protein isolates, starch concentrates, and pea fiber product which are all pea products available in Canada, and opportunities for extruded pulses, and soon our focus is on the food industry right now and natural health products. Neutraceuticals is an offshoot of what we are doing.

There are obviously other areas of bio-product opportunities for the pulse industry. The feed industry is very strong. I have got bio-fuel there which is a
big question-mark. We have had a lot of talk about bio-fuels today. There is somewhat of a consensus in the pulse industry that there is an opportunity for bio-fuels but it may not be the best one for pulses. Compared with other cereal grains, pulses are lower in starch. From a bio-fuel perspective, pulses may not be ideally suited. Therefore we need to look at other opportunities.

There have been things like edible films that have been developed. Right here in Canada, we have created these edible films to use in pharmaceuticals and neutraceautical products made from pea protein and pea starch. Bio-plastics is another opportunity. There is work going on at the Center for Agro-Technology in Alberta. We have developed bio-degradable packaging and pulse starch goes into cardboard products. Agriculture and pet food, there are other bio-industrial opportunities for pulses. Lastly, pulses are key and important to consider in terms of a sustainable approach to agriculture in Canada. Pulses fix atmospheric nitrogen so you do not need to use nitrogen fertilizer when you grow peas, lentils, or chickpeas. That is not true of edible beans. There can be some significant reduction in use of nitrogen fertilizer by planting pulses. They are key to an effective crop rotation to break disease resistance and therefore, lead to lower use of chemicals for diseases. Legumes are an efficient source of protein. Somebody mentioned that if takes a gallon of fuel to produce a pound of beef. I am not quite sure if that was what it was? I have got here that it takes six kilograms of plant protein to make one kilogram of animal protein. As world demand for protein increases, pulses provide a good opportunity and a good alternative source of protein. Pulses are key to a sustainable agriculture in Canada. I am going to finish there.
I have to tell you a quick story. When I first started at Pulse Canada, somebody told me the story about a soccer team in South Africa, who had hired a nutritionist. They were kind of a ‘bottom-of-the-barrel’ soccer team. This nutritionist was really strong on using lentils. She felt that lentils were really good for providing sustained energy. So, she developed a diet for these soccer players based largely on lentils and pulse crops. This soccer team became the most successful soccer team in that league and ended up winning the cup that year. That was the story I was told early on when I started at Pulse Canada. And it was very inspirational. In fact, there is a study going on right now at the University of Saskatchewan, looking specifically at lentil consumption and endurance. It is called the Lentil-Soccer Study, and it is inspired by Dr. Bert Vandenberg, a breeder from University of Saskatchewan, who told me last week that, in fact, the whole South African story was a myth and that, through a game of password, had been completely misinterpreted. It was not true at all. There was a woman who had been hired as a nutritionist for a soccer team that had marginally improved their performance and they had occasionally eaten lentils. However, Dr. Vandenberg is so convinced of the benefits of eating pulses, that he decided to really push for this study. They are doing it right now and the preliminary results look very positive. I am going to finish there. I think the term Canada’s Pulse Revolution is appropriate. There is a revolution going on right now in the pulse industry. Production is increasing dramatically. More and more people, as they are looking for healthier alternatives are going to recognize that pulses fit nicely into a healthy diet.
Ms. Ruth Sol

Thanks very much, Peter. I know you were not able to be here this morning, but, unbeknownst to you, your presentation tied in very nicely with what John Oliver said this morning regarding health outcomes. So, it does work very nicely.

Questions? Opportunity from the floor.

Terry Zdan
Manitoba Infrastructure and Transportation

I have three comments or observations. This morning’s presentations started off with something about shooting for the moon, which has a transportation connection or implication. I have the simple question and I am sorry for being so blunt. But I am interested in knowing what the implications are for growing the bio-product value chain on Manitoba’s transportation systems? I would encourage the inclusion of a sustainable transportation plan at the front end of developing this industry. In terms of the bio-fuels that we have talked about here today, my perception is that there is a need for standardization for fuel quality between jurisdictions, either inter-provincial or international. I think it is important to work with international partners in developing these. There may even be a potential for export opportunity, hopefully through the Port of Churchill to Europe for some surplus production. Secondly, on a good news front, probably unknown to most of the people from out-of-town, within Manitoba Infrastructure and Transportation, we operate an E-85 fuel station to service about sixty flex-fuel vehicles in Manitoba’s provincial fleet. There are about 6,000 to 7,000 vehicles like this operating in Manitoba and everyone who is driving does not know that they are flex-fuel because they are not marketed that way and there is no fuel for it. However, in the eight months that we have operated these, we have used 22,000 liters of E-85 substituting for 17,000 liters of
gasoline and avoiding about 25,000 kilograms of CO2 emissions and at a cost that is fuel neutral because the price is based on the energy content of the ethanol in the fuel. One of the things that we would like to do in our sustainable transportation profile is find out ways of expanding that industry and that opportunity for other commercial fleets and the public at large at some point in time. I would be happy to work with the fuel industry on that one.

The third point is that I happen to have a Blackberry, and they are a curse and a blessing. The curse is that the boss can call you 24/7 and the blessing is you can yap back 24/7. The other benefit is that you stay connected to the World Wide Web. I just received an email this afternoon from the Biotechnology Industry Organization. You should google that. It is www.bio.org. They just put out a report today titled Achieving Sustainable Production of Agricultural Bio-Mass for Bio-Refinery Feed Stocks and Detailing Potential of Cellulotic Bio-Mass in an Energy Response, including no-till farming. That is just a bit of information that those things are out there today. I have the details, if anyone wants to read my email.

Ms. Ruth Sol

Thank-you. Do any of our panel have any comments? I guess, Terry, I only had one where you wanted to know the impact on transportation on all of this. I would say, I feel like I am an operator in transportation and I think the industry needs to respond to the needs of shippers of every sort. I mean, we are there. Whatever the industry needs, transportation will respond. That is just the way I view the industry as having to deal with it.
Are there any other comments or questions? We have had a lot of information, and it is been really good information. I am looking forward to a final report. Anyone else? Yes, Peter.

Mr. Peter Watts, Director of Market Innovation,
Pulse Crops Canada
I have a question I think is for Henry. I heard that the U.S. has about $1/gallon subsidy on bio-diesel. How does that affect our competitiveness in Manitoba? And, are we competitive with that kind of a subsidy?

Mr. Henry Nelson
Manitoba Agriculture, Food, and Rural Initiatives
How do you answer? You are right that the support level for bio-diesel is U.S$1/U.S.gallon of bio-diesel that is in the form of a blender’s credit. That translates to about 31 cents/liter in Canada. The support for ethanol, I believe, is about 51 cents/U.S. gallon. In terms of the ethanol, as Allen pointed out, the current level of support for ethanol here in Manitoba is about 25 cents/liter. When the mandate is instituted, that comes down to 20 cents, and then it is an eight-year reduced scale after that. In terms of bio-diesel, that 31 cents/liter in the U.S., by comparison here in Manitoba, we have the 11.5 cent highway tax relief on bio-diesel, and that, at the present time, combines with the 4 cent/liter elimination of the federal excise tax. We are about half the level of support here in Manitoba, at the current time. What we are anxious to have determined is what the federal program will be coming out under the Renewable Fuel Standard. So, I guess at this point that gives you an idea of the relative support at this time. Clearly, the federal government is looking at both the requirement for a mandate and the appropriate level of supports.
I think, as Owen mentioned earlier, we could see the level of supports, the impacts they have had in the U.S. and they clearly have driven the industry. You can see the number of plants that have developed there and the demand for both soy beans, in the case of bio-diesel, and corn, in the case of ethanol. On the ethanol, one area where we are competing there is with the yield of corn, when we compete against that there is a lot higher yield of starch per acre there. We are competing in that sense.

One of the advantages we have here in Manitoba is that, if we use wheat, there is going to be a lot of corn distiller’s grain available in the U.S. We also saw where it is very critical with the ethanol plants market that distiller’s grain or that co-product effectively. There are big spreads in how effective they are at marketing that. In Canada we have some unique properties from wheat distiller’s grain and that is why we have to look at markets for those co-products, not just in feed markets, but also in human food markets. There are a lot of things that impact on it aside from the support levels. Again, we have to go back, as well, when we develop policy anywhere to look at the long-term impacts of the policies we put in place. The U.S. clearly have a different driver for their bio-fuels policy and the top driver, of course, there is energy self-sufficiency, followed by emissions and rural development. In Canada, we do not have the same driver. That is not to say that we do not have some drive for self-sufficiency here in Manitoba, because we are a net importer in Manitoba.

Going back to the U.S. driver of self-sufficiency, it does create a high level of support which we did see. There were some very successful economic models and economic success for the farms that were involved. There were also one or
two cases where they were looking at utilizing that stover in an effective way. However, the majority was not using that stover in that form. They were mowing it down, then plowing it, and they were doing two things; they were burning a lot of fossil fuel to do that, both of those, emitting CO2. Then, through the plowing you were getting a lot of nitrification, so there were other impacts there. There were, no doubt, fewer farms involved. If our objectives here are emissions control and rural economic development, I think we have to look at competing directly with those policies in terms of what they are resulting in, relative to your main objectives. If our main objectives here in Canada are emissions control and rural economic development, we have to look at getting the industry started, yes! But, can we, do we need to compete directly over the long-term. That is the big question that probably somebody else with less gray hair will have to solve.

Ms. Ruth Sol
Thanks very much, Henry. I think that concludes it, unless there is a question? Yes, please.

Mr. Owen McAuley
A couple comments and then a question. First of all, the comments, and I probably was not fair this morning in my saying that governments are slow to move. I know that there is a process now underway, and it was mentioned by Allen, that one of the problems we have is in terms of developing feed grains for the ethanol industry. The Canadian Grain Commission has recently implemented or given advice to see everybody has agreed that we are going to have a new ‘catch-all’ category for wheat production, which feed grains could fit into. The limiting factor is that hard red spring wheats are going to be excluded
from it, which represents a big portion of the gene pool. It is not that we have
not made steps, we just maybe have not made big enough steps. Anyway, the
question really comes back to the viability of the bio-fuel industry in the end. We
are promoting bio-fuels. A lot of communities and a lot of producers are getting
really ‘hepped-up’ on it, in Saskatchewan and Manitoba, and even in Alberta, as
I see now as the government’s proceeding. The question I come back to is that
each jurisdiction draws a circle around itself that says if you produce it in
Manitoba and consume it in Manitoba, you get the subsidy.

The minute that we have reached the level that we have filled the demand in
Manitoba, and now we have still got communities and producers and everybody
‘on the bandwagon’ to produce more ethanol, and we now start to produce a
commodity that is unsubsidized. If I export it to Ontario, I get no subsidy from
the province, and I get no subsidy from Ontario. What is the viability of
exporting an unsubsidized commodity into a subsidized environment over the
long-term? Saskatchewan has already gone beyond what they are proposing to
have in terms of their mandated ethanol content. So, every new plant that is
being built is going to be exporting an unsubsidized commodity into a
subsidized environment. In the U.S., that subsidy goes whether it is produced in
Minnesota and shipped to California, they still get the blender’s subsidy, they
still get the federal subsidy. You are going to be consistently competing on the
over-production of what your province’s demands are. And each province
draws a circle around itself, puts itself in a silo, saying, “if you produce it in my
province and consume it in my province, you get a subsidy” but then they are
still encouraging production for the export. And now you are going to be
shipping that into a subsidized marketplace.
Ms. Ruth Sol
Anyone care to comment?
Allen?

Mr. Allen Tyrchniewicz
You have raised a good point, because, I think what we are doing is we are dealing with what I mentioned earlier. We are still looking at the public policy from the standpoint of where we want to go in the short-term and not in the long-term. I also mentioned, too, in the presentation, that we need to look at public policy that, once we have established those industries, they need to be self-sufficient. We should not be looking at subsidies at that point. If Henry’s right in terms of where the price of fuel is going, I do not think we are going to need to subsidize very much longer. But, you are right in terms of where we are in the short-term. It is quite difficult for a Manitoba producer of ethanol to ship into Saskatchewan or Ontario. If they are all operating on the same sort of enclosed subsidy formats, it is going to be a matter of, once we are up and running, we need to take a better look at where we are at those public policies and see if we need to modify them to keep the markets alive or to keep the industry alive.

Ms. Ruth Sol
O.K. I think we are just about out of time here.

Mr. Henry Nelson
I guess just a quick comment. If it is any comfort, Owen, I do think that there is a recognition that once the federal policy comes down, the provinces will be looking at making sure their policies harmonize. It comes back a little bit to the
drivers. For example, Manitoba initially had some incentives to get involved with a bio-fuels policy, but, clearly it is best if the federal government takes the leadership. That is what we see happening and hopefully we will be harmonized once that policy comes down. A final comment is, I do hope I’m wrong on that fuel price!

Ms. Ruth Sol

Thank-you very much, gentlemen. Please join me in thanking our panelists.

Ms. Ruth Sol

We are at the final session this afternoon. I have to be blatant and tell you this is my favorite part. I love to hear the part about transportation. I just have it in my blood. So I am really looking forward to hearing this next piece that ties it all together with the transportation implications.

I am sure all of you know Barry Prentice. Barry was Director of the Transport Institute for nine years and he is currently a professor in the department of Supply Chain Management at the Asper School of Business here in Winnipeg. Of course his major teaching subjects are logistics, transportation economics, urban transportation, economic development and trade policy. He is extremely prolific in his writings and he is probably one of the top facilitators in Canada in this field. Whenever I have a really, really tough panel to manage and there is going to be disputes and problems and such, I call Barry.
Session 3

Implications for Transportation and Logistics

Dr. Barry E. Prentice  
Professor, Dept. of Supply Chain Management  
I.H. Asper School of Business

Thank-you very much. One of the things you need to do whenever you are going to approach a topic is to get some definitions as to what you are talking about. Of course, one of them has to do with what is a natural product. In fact, when I was looking at this, I found there was a great spectrum of products. We run from such things as the bio-fuels, which you have heard a lot about. But, of course, that’s not the only thing. It’s really industrial inputs, and hemp fiber is as much an industrial input as is ethanol. Interesting to me, there was a big ‘to do’ about hemp about half a dozen years ago and then it kind of went away. I found out last year we grew 40,000 acres if it. I think that was the non-smoking kind, I am not sure. There might be 45,000 acres if you added the other in from all the basements in Winnipeg, and so on. In any case, we do see these products that go through a peak of interest and then they seem to die away. Then they do not necessarily go away completely. We have lots of case studies like that.

Moving to health foods, and, clearly, flax is one of those and certainly organics, and blueberries and so on. Well, every food is a sort of health food, as far as I am concerned, if it fills my stomach. But these have, I suppose, special ingredients that make them more health than others, if you wish. Then we move on to this sort of functional food area, where we have reinforced foods. And, it is not like
we have not had reinforced foods for generations. We have been putting vitamins in milk and breads and other things. Now we start seeing additional added inputs like calcium into orange juice and, more recently, fish oil into orange juice. I am looking forward to trying that one out. There are a lot of reinforced foods, if you will. GMO designer foods are, I am told, not a functional food. But they are functional, depending on what the GMO is doing. Of course, the special case we have is yellow rice, where they change the rice to add a vitamin to it. It is not a GMO on the production side, but on the marketing side. We are adding an attribute. Well, these are not really considered, at least by the purists, to be functional foods. But they are out there.

Then we move on to other products which are neutraceuticals. We heard a little bit about this with the pulse crops where you are taking parts and bits of different things and you are using them as additives. If you extract it and it is an additive, then it is a neutraceutical. You can see some of the lists up there: Sterols, being one, which I understand you can get from wood. I would say, that as we look at this topic more broadly, we are going to have to start blurring those old boundaries. I think forestry and agriculture become closer and closer together as we move into this whole notion of bio-products, and especially as we move into ethanol. We will maybe talk a bit more about that.

Finally we have the notion beyond neutraceuticals of real pharmaceuticals. That you could take food crops or other crops and produce active drugs from them. It is a whole lot easier to bio-engineer a crop and produce it, perhaps than to do something in a test-tube or a laboratory. We have a broad spectrum, and of course, my topic is transportation. Well, these things do not get transported the same. These are some of the considerations in the supply chain. I will tell you at
the University, we have an old saying, that if you copy from one source, it is plagiarism, and if you copy from two sources, it is research. Unfortunately for me, I can only find one paper on supply chains of bio-products like this, and it was not very useful, so this is all going to come out of me.

Here are the points that I have. Clearly these products impinge upon such issues as transportation costs and service quality; the quality of the vehicle, as well as pick-up, delivery, and reliability. Other things are on that list, from risk, and by-product disposal, labeling of course, being a big one, and this issue of niche markets. Let us start at the far end of our scale.

We have talked a lot about this issue of bio-products and plant size. You will notice that this is a quote from the Manitoba Energy website, which states that no market in Canada is large enough to use all the output from 100 million liter per year plant. That is, Domo, for example, cannot use it all. It has got to be used by the whole industry. This has to be some kind of a pooled thing. I also believe that the comment made at the end about Saskatchewan having a surplus of ethanol is something we have to kind of watch as to how much we do produce. There is a debate as to whether you go with big plants or small plants. I know that the plant in Weyburn apparently is 25 million liters per year. The Minnedosa plant is being expanded to 140 million liters per year. There are plants in the U.S. that are 1 billion liters per year. Well, there are economies of size and we have to respect that the more small plants we have, the higher the costs per unit are likely to be. However, you also have differences in transportation costs, both inbound and outbound. This is a consideration, especially in our area with small grains. It is not that you just get more starch with corn, you also get 200 bushels/acre on average. In the prairie grains small grain crops, how far do you
have to actually go to feed a plant that would serve 1 billion liters of production per year? I have no idea what that would be.

We also have some issues about ethanol supply chains, bio-diesel supply chains, and some by-product supply chains. I am going to just move to each of those independently. First, I think it is necessary to understand how we get the gas we use now. You have to look at what we are doing today and then look at what the change will be. Today, in Winnipeg or Manitoba, our gas is all basically refined in Edmonton. It is blended together to create a finished gasoline product and it is put in a pipeline and it is shipped to a distributor or a blender in North Winnipeg. All the gas comes out of the same tap, as we have all expected all along. Except, of course, each company has proprietary additives that they put in when it is being put into the fuel truck. You get that ‘tiger tail in your tank’, as it were. In any case, they can blend these things in, but the gas is already blended to make a finished gasoline when it comes down the pipeline, and that is how we buy it.

If you look at ethanol, there are a couple of issues. One is, it is a very corrosive product, so it can eat up different seals. You have to be careful of that sort of thing, what you are using. But, also, it is hydrophobic. It does not mean it is afraid of water; I think it loves water. It moves out of the gasoline into the water. The pipelines have a certain amount of water in them. They are called wet pipelines. Not a whole lot, but there is some. The bottom line is, you cannot move ethanol through the pipeline. So, all the ethanol has to be brought into Winnipeg and blended with the gas that is coming from Edmonton, in Winnipeg, before it goes in the trucks and off to the final distribution points. That, of course, creates some issues. One of those is, if you will notice, a second point,
any tank in the ground that was pre-1986 is suspect. They are not all bad, but some of them will not hold the ethanol because of the issue of corrosion. Of course, if there is water in the bottom of the tank, we do not want that gas anyway. Nonetheless, you cannot have any water in that tank, either. It has to be pretty well sealed.

The third point on my screen here is that ethanol cannot be added to the blended gasoline. What is coming down the pipeline today cannot be blended with ethanol. The reason for that is the vapor pressure of the fuel. You have to have a maximum vapor pressure or you get the so-called vapor lock that we have all heard about on the advertisements. We do not want that in our cars. Apparently they stall. So you have to have a certain maximum vapor pressure. That means you have to have a different blend of gas to mix with ethanol. This blend that you get coming down the pipeline has to be one or the other, because they do not have big storage tanks for the both. You have the blend that you are going to mix with the ethanol as well.

Of course, there is this last point on the screen of quality insurance and cost for small plants. It costs apparently about $1000 to test a batch of ethanol. So, if it is a small plant with a small batch, it is $1000. If it is a big plant with a big batch, it is $1000. Well, obviously it is more per plant. Everyone has to be tested because the fuel companies are not going to want to mix a product that they do not know in with their gasoline and then have their customers complain that they had something go wrong. We also do not want to drive around in our cars with those problems either. That is a challenge.
Another one of the challenges is, how do you bring everything together at once, at the right time? Nobody wants to have inventories in storage, if they can afford it. That means that the ethanol has to arrive at the blending plant at the right time to be mixed with the gasoline, in the right proportions, to go out to the filling stations. If you have small plants, or even if you have just one big plant, you have to have that reliable supply coming in at a prescribed rate so you do not end up with too much or too little. It is not like being blended back in Edmonton. Finally of course, anyone who thinks you can move products in a truck as cheaply as you can move them in a pipeline, I have a bridge for you that you might want to buy. It is going to cost more for transportation to bring these things to market. We are going to face additional handling and logistics costs, and transportation costs to move ethanol out to the market. We should not fool ourselves. They are going to be there. Plus, of course, for those who are drivers, you are going to have to go more frequently to the gas station. Not a whole lot more, but you do not get as much power from ethanol. When you fill your tank up, it is not going to go as far as it did when you had regular gasoline. You are going to be burning more of this, as well. You do have some issues in terms of the logistics and transportation to make it work. Now, in talking with the fuel companies, they are committed. But, be prepared that it is not going to be costless. Ultimately the consumer will be facing some of those costs.

The other area of the costs, of course, has to do with the question of risk. We heard a bit about that today. I must tell you that I am a bit of an ethanol skeptic. I look at this and I say, “well, wait a minute”, we have grain markets that move sort of independently over here in prices, and we have fuel markets that move independently over here in prices, and it looks really good now because energy prices are high and grain prices are low. What happens when those reverse and
suddenly grain prices are high and fuel prices are low? Are we still going to have viable plants? Or are we going to have plants knocking at the door with a tin cup, asking for more revenues from us, the taxpayers, to keep them viable? Well, who is bearing that risk, is what I would like to know? Certainly, I hope too many farmers are not baring that risk. There is also the risk of subsidies themselves. I understand that in Manitoba, the subsidy on ethanol is supposed to be phased out. So, over a certain period of time, it does disappear. That is important that it should. But, on the other hand, the Crow Rate was supposed to be phased out, was it not? It took a hundred years roughly to see that one happen, so I am not so sure about phasing out subsidies.

My last point on this issue of risk is, that I am a skeptic on high energy prices. I do not care about the rising demand. I think that supply has a nasty way of responding when prices get higher. There are so many fronts of energy that people are delving into. Do you really believe that we are not going to see some kind of a tidal wave of energy coming at us that is going to depress prices within the next ten years? Actually, I am hopeful that we see these prices continue for five years, so we get enough of that new technology in place. I am not optimistic that we are going to see high fuel prices in the longer term. I think we have got some real issues there and we should be watchful of that. So, forgive me for being a skeptic on this. I will say one thing though, in the longer term, I can be optimistic on ethanol, but it is nothing to do with grain crops. It has do to with other sources of production, be it woodchips or straw or other sorts of waste materials. That is where I will come back to the forestry side. I think we are on the cusp of seeing that technology where we can produce ethanol from these other products. And that is where I think the future is in this, and not in grain products.
Well, having doused a little water on that flame let me move on to bio-diesel, because I am not so sure I am all that much more enthusiastic about bio-diesel, either. One of the issues, of course, is it is fine in a captive fleet at the present time, but over the road, trucks use most of the diesel. Unless you do have that constant quality across that whole system and you can pick it up, I do not think truckers are going to be happy to buy a tank here and then find they cannot use something similar someplace else. There is some experimentation going on and demonstrations, I understand, one within Alberta, to look at bio-diesel over the trucks within Alberta to get that rolling. No doubt, this can be handled. I am sure that it can be overcome.

The one thing that cannot be overcome, at least at this point, is the issue of cold temperatures. We are going to be restricted down to 2% or less bio-diesel in the wintertime and maybe we can get higher, 10% or 20% or what have you, in the summer, which is all well and fine. However, what does it do to the logistics and transportation of bio-fuel and also the feed stocks? Canola oil is harvested in the fall. If the bio-diesel demand is all in the summer, it has to be stored someplace, and it is going to be residual buyer come summertime. Depending on what the food markets are like, the bio-diesel’s going to be there at the end of the market cycle, as far as I can see. Or it is going to have some interesting implications for the future’s markets. I mean, that may not be all bad for farms but, again, I do not know what risk I would be taking on if I were in the bio-diesel business, in terms of being at that end of the market.

The last point on this is the by-products. When I first heard about ethanol, everybody was crowing about well this is great. We buy the grain, we suck out
the ethanol, and we still sell the grain for as much as we bought it for, because now we have upgraded it to brewer’s grains. Well, I just saw something come across my desk the other day. It said that brewer’s grains prices have now fallen to the point where they can be inserted into hog rations. There was a concern about what this might do to carcass quality because of the extra oil in the brewer’s grains. I used to remember brewer’s grains being really high-priced feed they only used in dairy rations. So, my view is that there is an elasticity of demand for these by-products. If we start putting more and more and more of these brewer’s grains on the market, the price has got to give. It also means we have to sell them further away. That gets into transportation costs. What we are going to get paid for them, in the end, is going to be lower because the end market price is not going to move. It is going to be what we get less the transportation costs for where we have to ship them. I am not exactly certain how all these things are shipped at the present time, whether they are in bulk, or containers, or by truck, but, certainly this is something that perhaps deserves a little more research.

Let me move off bio-fuels and talk about something which I actually am very positive about: and that is the whole area of functional food issues. If you look at the food industry, there are sort of four reasons why companies can get excited about this idea, and one is, the opportunity to increase margins. You take a niche market for a particular product and you say, no that is not flax for linseed oil, this is flax for muffins. That is the high-price flax that you pay for in little bags. I told my wife that I can buy a bushel of flax for what you pay for that little bag of seed to put on my cereal. But, in any case, there are opportunities for higher margins just with packaging and separating out niche markets. There is the opportunity to re-position products and improve your market share. One of
those is to add in things like oat bran or some of the pulse fractions into a product, and then you upgrade it, and, of course you get paid more for that. So that is good news. Clearly, the idea is to compete in a different market segment. The idea of putting calcium into orange juice, I do not think, had anything to do with the taste of the orange juice. But, now it competes with milk. If you are worried about osteoporosis and you can get calcium in your orange juice and forget about that milk.

Then finally, of course, there is this notion of differentiating a commodity. I think it is remarkable to see eggs go from the heart-attack candidates of choice to, all of a sudden, a health food. Omega-3 eggs, a big change over. No doubt this has had some impact on sales as well. So, I say three cheers for the egg industry to have worked that one out. But that is changing that make up somehow, and suddenly you change the perspective somehow of what a health food is. Well, what is the issue of always dealing with transportation? Clearly, if you are looking at a niche product, you have to be able to guarantee that quality and you need higher quality transportation. So, flax, and you can see that is the edible flax on the left and the inedible flax on the right, has little bits of this, that, and the other in it. It is better cleaned. But that means you cannot just ship it with the rest of the flax. It is going to go in a bag or a truck or what have you. Of course, if it is an organically certified product as well, it has to be kept separate, distinct, and labeled and dealt with. Trucks and containers are going to be the way we move these unprocessed health foods. If we look at reinforced foods, automatically, we are into packaged products. There is definitely going to be higher quality transportation—truck or container. Obviously this is getting into some other issues in logistics dealing with labeling and perhaps shelf space.
How do you get your product on the shelf? Of course, we have two examples. One, I mentioned, the calcium in the orange juice, where you are putting the calcium in the orange juice and the omega-3, where you’re putting the flax in the chicken. Whichever way you want to come at it, you can make a change in the product. One of the issues that I see there is product quality assurance and guaranteeing the quality of the product. And that means higher value transportation as well. Time through the system, best-before dates, and many other issues are going to be there, because these are manufactured products essentially.

The last point of claims and labeling, we talked about. These are the GMO designer foods. I certainly see an opportunity for more of this, where we start to adjust the foods and put in extra benefits or attributes. Some years ago at the Fields on Wheels, we had a talk where they were looking at the idea of breeding a wheat that would not have you absorb that much carbohydrates. Well, that would be great if you wanted to eat all the bread you wish and not put on any inches to your waistline, but not so good if you are in a country which really wants the energy. You do not want to mix these things together. Again, for purposes of traceability, you have to keep them separate in the system. We are more than well aware of Europeans’ views on GMO’s, and how it affects our bulk handling systems, so anything that is a GMO is going to have to be kept separate. And that will likely mean it is going to go in a truck or container for that reason.

Food ingredients are the items that are extracted. I think one of the niftiest bits of packaging I have ever seen is the encased fish oil molecule. It does not dissolve until it gets into your stomach. I guess that is how it works in the orange juice as
well. So here is a case of a nutraceutical and a functional food combined, in terms of orange juice. Another way of having these things moved around is in pill form. Whether gelatin caps or bottles, the issue there is that you do have to be careful that things do not freeze in some cases. So your quality of transportation has to be better. Refrigerated trucks that are heated in the winter time could be an issue, and perhaps 25% of all these products would sort of fall into that category. So you do have issues.

You also have some issues with moving from a powder to a liquid. This can move you from being a non-hazardous good to being a hazardous good. It is simply a case of, if you have a spill, you can sweep it up if it is a powder. If it is blended in a liquid, all of a sudden, you can not. Then, your system of transportation and what you have to do in terms of labeling and other things, changes on your vehicles. So, you do have some issues there, also, with the way that transportation goes forward. There could be issues in terms of customs, tariff categories, labeling, non-tariff barriers, on all these sorts of products that are out there.

I would like to move on to one of my favorites, which is this notion of producing medicines from crops. Of course, one of the big concerns is what happens if we start to see cross-pollination of these sorts of crops into our other food crops. Do we really want canola producing digitalis inadvertently, or something? If you are going to do this, you have to have a restricted area or a pretty wide area where the crop cannot spread.

There is also the issue of specialized harvest and handling equipment. Farms that are producing these sorts of products may need a stainless steel combine
and a completely sealed cab with a washroom for the operator. Do you go to a centralized processing facility of a decentralized number of processing facilities? Then there is the question of by-product disposal. You cannot put this into the feed industry. Obviously, it has got some kind of patent medicine associated with it. How do you dispose of it? Do you burn it? Do you take it back to the field it came from and spread it?

Then of course, we have issues of just simply the risk liability and licensing and getting approval. I can tell you that there are products that people have been developing that could be produced from food crops and they have not been making a whole lot of headway. One of the notions is to use our old friend the tobacco plant. Nobody’s going to eat that anyway. So, why not use the tobacco plant? And we know a lot about it. Genetically modifying that plant to be able to produce things like insulin or any of these products that we would like to produce, and extract them from those plants, and use them. Clearly, your value per acre would be very high if you were in that business.

Transport security is an issue in this because you have to be approved, in this case probably, by U.S. Food and Drug Administration and, in Canada, by Health Canada for your whole system. So, there is an issue to how these things would move around and how you would deal with it. Well, there are a couple of aspects. What are the transportation implications for western Canadian bioproduct markets? Clearly, as a percentage of the final price, transportation is going to be less important as you start moving up the value chain. That is really good news for us in Canada because we are located the furthest from world markets in terms of transportation costs. We are a long way from tide water. If we can make products worth more, we can ship them further and get paid better
for them. If we can reduce weight or bulk, and by and large, we would be able to do that, that certainly would be a positive for us here in western Canada.

In terms of the implications for the bio-product markets for transportation, quality becomes much more important. I think the comment made earlier about the rail cars is a good one. None of these products, in my mind, are going to be moving in hopper cars. Maybe the by-products from the distiller’s grains will, but I do not see a whole lot of the other products moving in hopper cars. They are going to be moving in containers, or trucks, or even by air, to markets because they are fairly small quantities of fairly high value. We could see a different transportation regime. I have no doubt whatsoever, that we can work out all the wrinkles in the transportation sector. As Ruth said, transportation will accommodate whatever is out there. Especially if there is money to pay for it. That is when it really helps. Certainly, these products being worth more go a long way towards making that happen. I do not see that as being a difficult issue, but it is something that we are going to have to think our way through as we start moving down some of these issues.

I will close on this slide. One of the most surprising bits of information I have received recently, next to Ty Dommie’s love affairs, is that beer was really good for you! But, binging on a Grey Cup weekend is not the same as having one beer a day for the rest of the month. So, it is dosage that matters. One of the issues that comes up, is how much is the right amount of any of these food products to keep us healthy and keep us going? It is an issue I think we do have to be concerned with. I will also leave you with one final story, which I cannot resist telling you. I saw that food chart of what we should be eating put on the screen. Until my sister’s children reached adolescence, she had managed to convince
them, as she had the guide on the refrigerator, that it was the law. You had to eat this. It was not just a guide. So, anybody with small children, you might want to use that in terms of a healthy diet for your children. With that, I will turn it back to you.

Ms Ruth Sol
Thanks very much, Barry. Any comments? Questions?

Mr. Owen McAuley
Barry, a comment. Quite honestly I am probably as much of a skeptic on ethanol in the long term as you are, in terms of needing to fix some of the problems around it. But, you asked about logistics and the elasticity of distiller’s rye grain. On the trip that we took to Minnesota, there were plants there selling distiller’s rye grain for $65/tonne. There are plants in Iowa selling it for $63/tonne. The impact that that is having on the feeding industry in Canada is that the feeders in Alberta find that it is 10 cents/pound cheaper to background their steers in Iowa than it is in Alberta. And so, if you do not participate in that marketplace, do you risk something else? That is an issue that you need to look at in the bigger picture. When we were at Eleanor also, we did not see very many hopper cars. What we saw were lots and lots and lots of brand new tanker cars for moving ethanol everywhere.

Ms. Ruth Sol
Any thoughts?
Dr. Barry E. Prentice

All I can say am I think the trucking industry would be very happy with this development.

Ms. Ruth Sol

Anyone else?
So, does that mean that we are seeing the end of bulk grain movement or the decline? Sustained decline?

Dr. Barry E. Prentice

I do not think we will see the end of bulk grain, although people who know me well know that I think the end of bulk grain is happening anyway, because of the tremendous development of containerization. I think it is just a better system of moving grain, in bulk, overseas. But, as far as commodity grain, or unprocessed grain, I think we are still going to see that as the big end of what we sell. These just add, I suppose, some extra revenue because there is not going to be enough in these sorts of commodities to take up all the grain we produce, by no means.

Ms. Ruth Sol

Certainly, over time, how to get greater value added out of the grain products, I guess one of the things we want to make sure of is that the farmer gets a share of that exercise.
Dr. Barry E. Prentice

Let me just comment on that. Because it does come back to this notion that a lot of the reason that we are subsidizing ethanol and products like this is to help farmers. And who can be against that? But the question is, how much actually gets to farmers? What is the friction and the frictional loss when you are trying to pass a substance through an ethanol plant and so on and back to farmers, with a grain price somewhere? I do not know how much actually ends up in their pockets. Are we not worse off than if we try and do something more directly than trying to put it through the ethanol? The other side, is that I would like to know what happens to the money to keep the roads up if we are taking and giving a rebate off the fuel tax? Because all the fuel taxes in Manitoba now are dedicated to the roads. So, does that mean we are going to have less money for the roads? Or, is that coming out of the agriculture budget? I do not think anybody yet has answered that for me.

Ms. Ruth Sol

Brent?

Brent Van Koughnet

You just raised something interesting, and that is the idea if you are in a commodity market as a supplier, you are in a commodity market. There is not that much difference between a segregated commodity and a regular commodity. Every time we talk about these new markets, until we actually get producers participating with intellectual capital into the production chain, they are in the commodity market in six months. The assumption that you just create all these markets and it is always going to be better, it contributes to disappearance. However, it does not contribute to “it’s still a commodity that
can be replaceable and tradable, and the lowest price is the law,” in a commodity world. Most of the value-adding I see, still does not have an intrinsic intellectual capital contribution by the producer. So, you are not getting out of the commodity game as a producer until that happens.

Dr. Barry E. Prentice

Basically, I agree completely. I think the lowest price does rule. And it was said earlier today, the people in the ethanol plants are going to be looking for the lowest price. They are not going to be saying, “oh, I get this subsidy so therefore I’m going to give you 10% more”. It is not going to happen.

Jonathan Regehr
Civil Engineering
University of Manitoba

I think I agree with you that these types of commodities are going to be moving more and more by truck, by container. We are working on an inter-modal transportation study in our group for the Winnipeg capital region, and one of the things we are finding out is the difficulty in attracting an empty container to move anything here in Manitoba because it’s competing with a much larger inter-modal market. I am wondering if you can comment on that wrinkle in the system.

Dr. Barry E. Prentice

I could bore you for hours on this. I have others. One of the big problems we have, of course, is the issue of cabotage rules on containers. We have a very backwards system in Canada for moving containers and relocating them, that discourages the movements of empty containers within the country and
positioning them here to pick up. So that is one of the issues that we see. And, I guess the other one which is a market-based issue is that you have it very hot in one direction. Everybody should know that for every two containers that come, loaded, across the Pacific this way, only one load goes back. Half of all the containers are empty. The rates on containers coming across the Pacific to North America are double or, in some cases, triple what they are on containers going back. So, for some cases, it makes more sense for the shipping line to simply unload as quickly as they can, put the empty on, and head back for another good-paying load, as opposed to looking for a lower-paying backhaul load. That is one of the things that is just in the marketplace.

Personally, I think, as the Chinese yuan paper currency starts to increase in value and we see the North American economy perhaps slowing down a bit, we could see those markets start to move a little more. Then there will be more demand for backhaul loads and those containers are going to be a lot more likely to show up here seeking something. I think it is kind of a regulatory issue, and it is partly a market issue. But, in the longer term, we have got a lot of containers and there are a lot more coming. I saw a figure that said, in terms of shipping size, the fleet available on the open seas is going to increase by 50% in the next couple of years. This is just based on what is already in the shipyards and being built, because the container fleets have been growing so dramatically with larger-sized ships. So, ultimately they are going to have to find loads, and I think they will come here.

Ms. Ruth Sol

Until the demand for eastbound containers abates somewhat, right now a container that goes back empty is being paid for. Until we actually get some kind of a weakening in that eastbound demand, there will not be as much
interest in finding commodities of other products to go back in those containers. There is a lot of interest in the economics of moving and repositioning empty containers. It is definitely a big issue that we are working on.

**Dr. Barry E. Prentice**

In short, stop buying so much electronics from China and slow down that economy a little bit.

**Ms. Ruth Sol**

So, with that, I want to thank Barry.

**Ms. Ruth Sol**

Well, someone in this room has been paying very close attention all day, I am sure! It is now my pleasure to introduce Sally Rutherford. Sally is with Monachus Consulting Limited and a godmother. But, that’s all the biographical information I have. So, Sally, please join us.

**Ms. Sally Rutherford**

Monachus Consulting Ltd.

Good late afternoon. I actually went briefly at lunchtime to see if I could find sort of a fairy wand, because that was the sort of fairy-godmother that I would prefer to be. That I could actually really have some serious control. There are lots of things I would love to fix in this industry. I would really like to thank Barry, because he covered a whole lot of the items that I had been trying to figure out how to actually say. I knew it had not been said in the rest of the day and I think it is very important. The kinds of things I have been dealing with from a
consulting point-of-view, in terms of bio-products but also, in terms of food safety, traceability, all those kinds of things; looking at where the food and agriculture industry are going. It is very, very clear that we can no longer just deal with agriculture production, with food processing, with transportation. We have got to seriously look at developing a vision of what it is we are trying to do together. To try to break down those walls and actually try to address things much more on a value chain basis. That is how I sort of got into the bio-products value chain stuff with Ed and Allen about a year ago.

It was very concerning to me that, after all these years, we were seeing people, farmers in particular, buying into yet another government-sanctioned investment scheme that was going to revitalize rural Canada and potentially putting their life-savings, one more time, into ‘a pig in a poke’ without anybody seriously looking at what the implications were. I have told a couple of people here that the quintessential moment for me was opening the Manitoba Co-Operator. It was in the Manitoba Co-operator and it was on page three and seeing a picture of these two grinning gentlemen standing beside a revitalized hot-water tank that they were producing bio-diesel in. The article talked about how this was going to be the future of rural Manitoba and the future of rural Canada. We were just all going to be able to do this. Then, on top of that, getting calls from people in rural Manitoba, trying to fill our forms to get money to make bio-diesel. But, nobody thought about what they were going to do with it after they produced it.

Who were they going to sell it to? Because there were probably three or four other people in their community who were going to be doing the same thing. Were they going to be able to actually transport it and not get caught for transporting a dangerous good? Nobody thought about that. How are you
going to make sure that the standard to which it was being made was actually going to be consistent enough, even from batch to batch, that you were going to be able to run your own tractor on the stuff on a consistent basis? None of these things have shown up in any of the programming, federally or provincially, to this point in time, in terms of the kind of monies that are being made available to people. Unfortunately, a lot of the programming has been based on really heartfelt and very well-meaning and very intelligent assessment of what Canada’s potential is to produce renewable fuels based on an assessment of bio-mass in Canada. Some of you may have seen these maps. They are nice and colored. It is the whole country. It takes everything into account. It takes all of the trees and it takes all of the crops. There is no considerable analysis beyond that which goes into much of this. There is some, in terms of the kinds of things we talked about before, in terms of how a big an area you have to have to collect whatever the product is, the commodity is, to be able to product the fuel without spending more on energy than you are actually going to produce.

I sat through a conference where people argued. There were more economists in that room than you could shake a stick at, and everybody had a different point-of-view. There was no consensus. So, I think one has to be really cautious about moving forward on this stuff. This is not the Holy Grail. It is not a silver bullet. It will, unfortunately, largely become commoditized. In the last couple of weeks, if you look at the Economist and some of the business papers talk about the Brazilians and the soy beans they grow into ethanol. The price of soy beans that is going into ethanol has just dropped out of the market. Producing product for renewable fuels is not a panacea for altering the Canadian agricultural and rural scene.
It is really interesting to me that this is the Fields on Wheels and I really do have to commend many of you who, I am sure had no idea what it was you were coming to hear today, and certainly had no idea as we went through this morning. Despite the fact that John and Owen were incredibly entertaining and provocative, and then listening to Allen and Henry and the other gentleman from Pulse Canada, and trying to figure out, “O.K and this has exactly what to do with me?” I think the truth is that it does have something to do with you. If you can be generous enough to look at it from the point-of-view of being maybe just a little bit better educated when you leave here today than when you came in. In terms of what you are going to have to think about within a couple of years, you are not going to have to make any significant changes now, but you are going to have to start to think about how things are going to change in the future.

Certainly the kinds of questions that Barry was getting at at the end are very relevant. How is it going to impact the transportation system? Well, one of the gentlemen who was here earlier today from James Richardson is an engineer for their canola-crushing plant. They are not going to export that canola, which means it is not going to go on a train to the coast. It is going to stay here, get crushed, and turned into canola oil for the food industry. It is a different kind of transportation that has to be dealt with. Barry was absolutely right. There is no doubt at all that the type and the quality of transportation is going to change significantly. Some of the other work that I am doing is dealing with the food processing industry and with people who have to sell to retailers. They are beginning to already feel the big chill. Wal-Mart is not even here yet with their big food stores. Everybody else is getting ready. The pressure is seriously on to reduce the costs of the products that are going on the shelves. At the same time,
as was mentioned this morning, Wal-Mart is expanding its product line into things like organics. It is expanding its product line, not into specifically different products, but different qualities of products. How is it going to differentiate itself? It is going to differentiate itself on quality at a low cost. In the U.S., they are even changing the nice little blue-tabard ‘uniform’ thing that they have got for people because they want to project a more high-class image. And the products that they are going to sell are going to have to reflect that. It is not going to be the Wal-Mart stuff all the time that you are going to find. They are going to make demands like that, not only on the people who make the products that they sell, but the people who transport the products to their stores.

That becomes very important for all of you as you try to figure out where you are going to be in ten years. It is one thing to be a farmer and say, “O.K...well my planning intentions for this year are ‘x’ and maybe in a couple of years, depending on the market, I will change that.” If you are building roads and you are deciding what you are going to invest in a rail line, or in cars, or in your truck fleet, it is a much longer term decision. You have got to think through where it is you are going to be in that ten-year time frame, and starting pretty soon. You have got that kind of challenge that you are going to have to deal with.

This morning, John talked about the dominance of health. Again, that simply comes back, in terms of a transportation issue, to the quality of the transportation, and also the type of transportation. It is not necessarily large quantity. It will be potentially very small quantity. One of the best examples, or stories, around that one was a former federal Minister of Agriculture got caught because he gave a speech one day about the value of lycopene in tomato skins. The poor man was speaking in Southern Ontario, to a bunch of people who
included a lot of tomato producers. So, they all got quite excited. This was really valuable commodity within the tomato skin and everybody was seeing dollar signs. Then it turns out that it takes a fairly significant technological and chemical process to extract the lycopene. And it is a very small amount from the tomato skin. And you only do it after you have already mashed the tomato into ketchup. They were still going to be paid for the tomatoes to make ketchup. It was going to be the processor, who had thrown away the tomato skins before, who was going to reap the rewards in terms of this neutraceutical that was worth a lot of money. I think we have to be really careful, as we go forward, that we are not seeing some of these other ‘wonder’ commodities or ‘wonder’ products that are going to really make a difference.

We do have some real opportunities, in terms of bulk commodities. If we are going to reap the rewards of Iowa exporting its hog business for example, then that does mean that there is a continuation of significant bulk transportation, one way or the other. But, it might be in a different direction and it might be of a slightly different sort. The issue of food miles is something else that is going to become increasingly important, perhaps, in truth, not as an economic issue from the transportation industry’s point-of-view, but much more as a warm and fuzzy consumer feeling in terms of what it is that you are going to buy when you go to the grocery store and which grocery store you are going to go to. The vast majority of people in this country have no relationship to rural Canada. Even if they do, what is it that they really want and need? There is a huge fear of food and a belief that technology and medicine can make you better, all those kinds of things. People are willing to pay for that, and they are going to continue to pay for that. The industry is going to, frankly, pander to that.
The food miles issue is something that people are going to have to take into account. Are you going to retro-fit your diesel train engines to run on canola, soy beans, and animal fat? We already have products that actually show their energy balance. That is going to continue to be there. It is not going to be the whole market. It may even not be a significant part of the market, from a volume point-of-view. I think it will take increasingly large part of the market, from a value point-of-view. I know that Owen is really taken with the idea of the rural renaissance on the USDA website. It is quite a different approach that they have taken, in terms of how they are approaching the whole issue of bio-products and bio-processing in relationship to rural America. It is very specifically aimed at the Great Plains. There is very little that actually goes on in the rest of the U.S. And it certainly does not deal with anything but annual crops. I have had people from the U.S. tell me that if you have trees, they do not want to talk to you. One of the things that Canada has lots of is trees. We have lots of dead trees in B.C. and we are soon going to have lots of dead trees in Alberta. We have lots of trees going begging in the rest of the country because of the economics of the pulp and paper industry, and the fact that they are suffering from many of the same kinds of challenges that the agriculture industry is, due to competition from other countries.

We have some real opportunities here to actually mix and match, in a way that the Americans do not, that can get us through some of the biological issues that Barry mentioned earlier. One of the things that has always confused me, and it was brought up again, Owen mentioned the different subsidies in the different provinces. Manitoba has its little plan for bio-diesel and ethanol, and you have a drought, or you have a big flood. You do not have the volume of product that you need. What do you do then? Where does it come from? Alberta’s
commodity is all sown up. Saskatchewan’s is all sown up. Ontario’s has been triple committed. What do you do?

If we are serious about trying to do this stuff, we have to think outside of our own boxes. We cannot just think about it in terms of agriculture. That we are going to deal with the transportation system and actually put the stuff on a truck or a train and just move it around that way and then, as Brent mentioned, deal with it solely as a commodity. We have to think about it much more as a system. That we have a real opportunity to use the forests as well as the crops, in a connected way, to ensure that we have got constant supplies all across the country in places we need them. To be able to use those to actually address issues that are maybe not solely agricultural and may not be solely forestry related, but are also going to make a difference in terms of how communities are going to be sustainable. If you talk to people from Northern B.C., that is a real challenge for them. You hear about villages from the Prairies disappearing. They have got huge problems in Northern B.C. and Northern Alberta knows it. They are working really hard with the people in B.C. to make sure they are ready when it happens, because they know they cannot stop the pine beetle. It is not going away.

How do we actually make this stuff work? I think that there are some things that we really need to be careful about. Certainly, the existence of technology and the constant and increasing development of technologies that make some of the things that we thought were there, that were not there, possible now. I think that is one of the real challenges that we have. Which is why, I think, from a transportation point-of-view, there is a bit of reluctance to actually engage on some of this stuff. It became obvious to me that, fifteen years ago when people
started talking about greenhouse gases and all the things we should be doing, the reason nothing happened is because we could not. We are only now developing the technologies that were actually going to accomplish the things that we said we were supposed to do fifteen years ago. I think that is pretty much where we are with a lot of the stuff around bio-diesel, around ethanol. We have to be careful that we are not investing in already-old technology.

Certainly, one of the things around technology as well, is that, just because it is the last greatest thing on the list, maybe it is not the technology you want to buy into. Maybe it is one of the technologies out of the Composites Institute in Manitoba. Maybe it is bio-plastics. What is the line from ‘The Graduate’? “you want to be rich, go into plastics.” That may be true. Everybody is going into bio-fuels. We cannot compete with U.S. subsidies. Why do we not look beyond that? We have huge opportunities to really develop new and different products that others are not seriously investing in, that could actually provide the kind of intellectual investment that we need, where you do not have to have the really big plants. You do not have to have the kinds of infra-structure that you need for some other things. You still need significant intellectual investment though, in any of the changes that we are going to make. You hear in Manitoba and know full well that the Dow fiber-board plant went under at least twice, if not three times, and had various incarnations. One of the reasons it did was because they could not convince people to deliver product at the right time, with the right moisture level, in the right kind of bales that they needed. It was not their only issue. It is hard to believe that Dow did not know how to market it, but that is another story. But, they did have a real problem with trying to get farmers to actually change the way they did business. They delivered the straw the way they delivered straw. They did not deliver straw the way the plant that
processed straw needed the straw delivered. That is just one example of some of the changes that people need to engage in.

We have got to actually make some of those changes. Be prepared to make some of those changes, and be more sophisticated in the way we are actually going to deal with some of these things. I have a cousin who is a dairy and a cash-crop farmer. For fun, he went out and bought fifty acres to produce maple syrup in Quebec, in the wintertime, by foot. He is a bit of a nut, perhaps. But when we were talking a couple of years ago, he told me that if anybody else came up to him and told him that farming was a business, he thought he was just going to sort of haul off and hit him. Because, they are very good business people, and they have made lots of money running a very good operation. They could have chosen to have done anything. They chose to farm. That did not mean that they turned their brains off. What they did was to use their God-given intelligence and their educations to be able to make a significant success of the operation, so that they can have the lifestyle that they want to have.

I think, that if we are going to really make a success of the bio-products initiative, we have to do that from the ground up, with the people on the ground who are willing to make those intellectual investments. It is not just a matter of money. It really is a matter of being able to break down the barriers to talk to the people that actually transport your commodity and to talk to the people who are either producing the new varieties or the blood-products in the tobacco or the hog with the specific genetic qualities that are going to make it better to eat. We have got to be able to ensure that those people are going to be there, and to bring it back to what John said this morning. To have an industry that is actually going to attract and keep the best and the brightest to make this not the agriculture that we
thought of in the past, but the agriculture industry that we want for the future. That is absolutely the basis of a rural renaissance for Canada that includes the transportation industry. That includes local processing and all kinds of things that people did not perceive as rural Canada before. But, I think that that is a real possibility. I think it is a real possibility if, in particular, people on the ground put their heads together, take their destinies into their own hands, and use government for what government is good for. To be able to provide the framework and the support frame, the regulatory system to figure out how to have the roads, how to have the electricity, how to have the internet connections. But, it has got to be people on the ground themselves who are going to be able to actually make the bio-products revolution actually work. I guess with that, I will stop.

Ms. Ruth Sol

Thanks very much, Sally. I think that there are some ideas there that are the germ of what our vision needs to be. And I hear it in the term ‘intellectual investment’. I really appreciate your comments and we have a small gift for you. So, thank-you so much.

It is now my pleasure to call up Dr. Larson. Dr. Paul Larson is the Director of the Transport Institute, and he will close the conference. So, thank-you.

Dr. Paul Larson, Director of the Transport Institute

Thank-you, Ruth.

I have the difficult task of closing such an interesting conference. But I think this is more of a beginning for us, than an end. There is a lot for us to think about to advance into the future.
I want to close by thanking a few folks. First off, two of my predecessors in this position who have been instrumental in this event; Dr. Barry Prentice and Dr. Ed Tyrchniewicz. As I travel about the country on Institute business, I hear terms such as ‘national treasure’, ‘living legend’, and ‘Mr. Transportation’ in reference to these gentlemen. I hear other things, too, but those are the only three that I could actually say publicly here. Thanks to these gentlemen, I think the Institute has quite a nice reputation in Canadian transportation circles. I also want to thank Barry specifically for this news about beer. I knew that since I was in high school, that beer is good for you and I thank you for pointing that out.

I also want to briefly thank the entire team at the Transport Institute and the Department of Supply Chain Management, including Kathy, Sharon, Doug, Alistair, Al, and Brian and Suki, our two new guys.

Finally, I want to thank all of our fine speakers. I want to thank Ruth Sol for joining us from Vancouver, Minister Struthers at lunch and also all of you folks for your participation throughout the day. Thank-you very much.
Speaker Bios

11th Annual Fields on Wheels Conference

Dr. Ed Tyrchniewicz
Associate Dean
I.H. Asper School of Business
University of Manitoba

Ed Tyrchniewicz PhD, P.Ag, is currently Associate Dean of the Asper School of Business at the University of Manitoba, and Professor in the Department of Supply Chain Management. Trained as an Agricultural Economist (PhD – Purdue University), Ed has worked in Universities for more than 35 years with more than 20 of those years being in various academic administrative positions. While at the University of Manitoba ((1967-88), he was a Professor of Agricultural Economics, Head of the Department of Agricultural Economics, and Founding Director of the Transport Institute. He then served as Dean of the Faculty of Agriculture and Forestry at the University of Alberta (1988-96). Since taking early retirement from the University of Alberta in 1997, he has held a variety of part-time appointments, including Senior Fellow at the International Institute for Sustainable Development (1996-99), founding Executive Director of the Manitoba Rural Adaptation Council (1997), and Adjunct Professor of Agricultural Economics at the University of Manitoba from 1998 to 2004. He is also involved in consulting and public service advising in the areas of agricultural and transportation policy, natural resource management, and organizational management and capacity building. He is currently Chair of the Agricultural Policy Framework Review Panel.

Mr. John Oliver
President
Maple Leaf Bio-Concepts

Mr. Oliver is currently President of Maple Leaf Bio-Concepts, a consulting firm in biotechnology and bio-economy strategies. His professional interests include; 1) promoting agriculture and its contribution to Canadian society; 2) making consumers and the agricultural industry at large aware of the opportunity the bio-economy represents for the 21st century; 3) recognizing the contribution of science to our well-being and standard of living. He is the Chairman of Flax
Canada 2015 Inc., a national initiative to develop flax as Canada’s bio-economy crop of the 21st century.

Mr. Oliver was a founding member and past Chairman of the Canadian Animal Health Institute; a founding member of the Canadian Agri-Marketing Association (and recipient of the first CAMA lifetime achievement award); and past Chairman of the Crop Protection Institute of Canada (to which he is an Honorary life member). Prior to his current position with Maple Leaf Bio-Concepts, Mr. Oliver was President of Dow Elanco Canada Inc., a joint venture between Dow Chemical and Eli Lilly to research, manufacture and market crop protection and biotechnology products.

Mr. Owen McAuley  
Producer and Board Member  
Canadian Agrifood Policy Institute

Owen and Anna Mae have been married for over thirty years, have three children, and five grandchildren. With their daughter and her husband, they farm over 6,000 acres, of which 4800 acres is in annual production, plus 700 acres of hay. They also operate a cow, calf, and feeder cattle operation, and have partnered in a large hog barn in the community. Named Manitoba Farmer of the year in 1991, Owen was a Municipal Councilor for 11 years and a long standing member of the Virden District Vet Board and Keystone Agricultural Producers. He has also served on several Blue Ribbon Panels for the Federal Government, was part of the Manitoba Farm Mediation Board and the Farmland Ownership Board for the Manitoba Government. Currently, Owen sits on a Federal advisory committee for rural affairs and on the board of directors of Canadian Agricultural Policy Institute.

The Honourable Stan Struthers  
Minister of Conservation

Stan Struthers was first elected to the Manitoba Legislature in 1995 as the member for Dauphin and was re-elected as the MLA for Dauphin-Roblin in 1999 and again in 2003. In his first term, he served as the NDP’s Natural Resources Critic and Deputy Agriculture Critic and recently served as the Legislative Assistant to the Minister of Health, the Honourable Dave Chomiak.
Stan graduated from Swan Valley Regional Secondary School in 1977, and later received his Bachelor of Arts and Bachelor of Education degrees from Brandon University, and his Masters of Education from the University of Manitoba.

A teaching career that began at Norway House Reserve also took Stan to teaching positions in the Parkland area, including a two-year term as principal of Rorketon Collegiate.

Stan and his wife Michelle reside in Dauphin with their son. Stan is active in the community as a member of the Fort Dauphin Museum Board, the Wildlife Federation, the Dauphin and District Chamber of Commerce and the Rotary Club, and as a volunteer for Citizens on Patrol.

Ms. Ruth Sol  
President  
WESTAC

Ruth Sol is President of the Western Transportation Advisory Council (WESTAC). She joined the Council in 1983 as Research Economist and held increasingly senior positions. Previously she held positions in market research and statistical analysis at HA Simons International, a consulting engineering firm in the pulp and paper industry, and MacMillan Bloedel Limited, an integrated forest products firm.

Ruth earned a BA (economics) and an Executive MBA from Simon Fraser University. She is a member of the Association of Professional Economists of B.C.

WESTAC is a member-based organization of senior decision makers in all facets of transportation – business, labour and government, across modes. Under Ruth’s leadership, this powerful forum brings together industry leaders to debate, discuss and better understand issues affecting some aspect of transportation. The Council contributes to the excellence of the western Canadian transportation system by ensuring that the industry’s voice is heard and that the importance of transportation to our economic and social well-being is widely understood and appreciated.
Mr. Allen Tyrchniewicz  
President  
Tyrchniewicz Consulting

Allen Tyrchniewicz is the President of Tyrchniewicz Consulting, which specializes in agriculture and land use policy. He conducts research in the area of Prairie adaptation policy, with particular emphasis on agricultural adaptation, water management and climate variability. Allen is currently researching the role of bio-products and the importance of value chains in agricultural production, with special interest in bio-fuels and their associated co-products. Previously, he was the Senior Specialist, Natural Resource Management at the International Institute for Sustainable Development (IISD), where he has been for close to 8 years.

Mr. Peter Watts  
Director of Market Innovation  
Pulse Canada

As Director of Market Innovation with Pulse Canada, Peter Watts is tasked with discovering new value-added opportunities for pulses in the North American food sector. As part of the Pulse Innovation Project, Peter's responsibilities include the development of a strategy to stimulate pulse consumption and foster research and innovation leading to novel food products that incorporate pulses.

Peter received a Philosophy degree from the University of Winnipeg and a Masters in International Relations from Laval University in Quebec City which included an internship with the Blue Ribbon Canada-U.S. Joint Commission on Grains. He worked at the Canadian Wheat Board for nine years as Market Analyst for Europe and FSU and was acting Director of the Market Analysis Division prior to joining Pulse Canada. Peter speaks French and Spanish.

Dr. Barry E. Prentice  
Professor, Dept. of Supply Chain Management  
I.H. Asper School of Business  
University of Manitoba

Barry E. Prentice was the Director of the Transport Institute from 1996 to 2005 and is currently a Professor in the Department of Supply Chain Management in
the I.H. Asper School of Business. His major research and teaching interests are logistics, transportation economics, urban transportation, economic development and trade policy.

Dr. Prentice has authored or co-authored more than 150 research reports, journal articles and contributions to books. His scholarly work has been recognized for excellence in national paper competitions and awards. In 1999, National Transportation Week named him Manitoba Transportation Person of the Year.

Ms. Sally Rutherford

Bio Unavailable

Dr. Paul D. Larson,
Director, Transport Institute
Head, Department of Supply Chain Management
University of Manitoba

Paul D. Larson, Ph.D. is Head of the SCM Department and Director of the Transport Institute at the University of Manitoba. He earned a MBA degree at the University of Minnesota and a Ph.D. at the University of Oklahoma. Dr. Larson has consulted and conducted executive seminars, in Scandinavia, North and South America, the Caribbean and China, on logistics, purchasing and SCM.
11th Annual Fields on Wheels Conference
BioProduct Value Chains: Emerging Opportunities and Challenges

Speakers
(In Order of Appearance)

Dr. Ed Tyrchniewicz  I.H. Asper School of Business
Mr. John Oliver  Maple Leaf Bioconcepts
Dr. Marc Fortin  Agriculture & Agri-Food Canada
Mr. Owen McAuley  Canadian AgriFood Policy Institute
Dean Glenn Feltham  I.H. Asper School of Business
The Honourable Minister Stan Struthers  Manitoba Conservation
Ms. Ruth Sol  Westac
Mr. Allen Tyrchniewicz  Tyrchniewicz Consulting Ltd.
Mr. Peter Watts  Pulse Crops Canada
Dr. Barry Prentic  I.H. Asper School of Business
Ms. Sally Rutherford  Monachus Consulting Ltd.
Dr. Paul Larson  Transport Institute

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Rachel Bosc  Manitoba Agriculture, Food & Rural Initiatives
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