



Alberta Beef Producers Policy Position on Climate Leadership

Updated July 21, 2016

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Executive Summary of ABP Climate Leadership Policy Position

The Albertan and Canadian beef industries continually strive to be global leaders in sustainable beef production. Through the provision of government and industry support for sustainable farming practices that are resilient to climate change, Alberta's beef sector will be able to continue supplying food for the world's growing population, while sequestering carbon in grasslands, improving the overall health of these ecosystems, and reducing its greenhouse gas emissions footprint. The reduction of greenhouse gas emissions and optimization of carbon sequestration in grasslands will be achieved through strategically increasing productive efficiency, environmental conservation and stewardship, and enhancing resilience.

Alberta's Climate Leadership Plan

Alberta Beef Producers (ABP) is a democratic organization that works on behalf of close to 20,000 cattle and beef producers from all sectors of primary beef production (seedstock, cow/calf, cattle feeders) and all areas of the province. ABP is an organization of producers, led by producers, working for producers. The ABP Mission is to strengthen the sustainability and competitiveness of the beef industry for the benefit of beef producers, and all citizens in Alberta.

ABP recognizes the commitment the Government of Alberta has made to climate leadership and we are prepared to join all Albertans in addressing the challenges and opportunities presented by the Climate Leadership Plan. While we think that the Climate Leadership Plan will increase farm and ranch costs for transportation fuel, heating fuel, and electricity, we appreciate the exemption from the carbon levy for farm fuel and any other measures that will help reduce the transition costs to a greener economy. The beef industry is very much a "trade-exposed" industry that faces global competition from producers in countries that are not showing the same level of climate leadership as Alberta. The impact of Alberta policies on the competitiveness of our industry will be most noticeable in North American markets, where our producers and processors compete for cattle, beef, and market share with operations from the U.S. and other provinces that will not face the costs imposed by the Climate Leadership Plan. We hope that the Alberta government will consider these competitiveness challenges when decisions are made about investment of the revenue from the carbon levy.

Conservation and Stewardship

Cattle producers in Alberta have long recognized the importance of sound environmental stewardship in sustaining their operations for future generations and maintaining public support for their continued use of the land and water resources of this province. The grasslands of Alberta are the foundation of our cattle and beef industry and *ABP strongly supports conservation and stewardship programs* and activities that recognize the critical role that responsible grazing plays in maintaining healthy rangelands. Healthy rangelands not only support a strong cattle industry, but also provide substantial ecosystem services to society. These services include enhancing biodiversity, provision of wildlife habitat (including habitat for many Species at Risk), water absorption and filtration, nutrient recycling, and substantial carbon sequestration.

Clearly, carbon sequestration in the grasslands of Alberta will be an important part of the Alberta Climate Leadership Plan. ABP believes that there is an opportunity for Alberta to demonstrate further leadership on climate change by moving beyond the bounds of international conventions

and supporting programs that encourage maintenance of existing rangelands and prevention of the carbon emissions that would occur as a result of this land being taken out of grass production. Sequestration of carbon reduces greenhouse emissions, regardless of when it occurs, and avoided carbon emissions have the same environmental benefits as recovered soil carbon stocks through changes in land use that meet the additionality requirements of international conventions.

Financial incentives to support the sequestration of carbon in grasslands are one example of Payments for Ecosystem Services (PES) that recognize the societal benefits of landscape management. Programs that offer payments for the other Ecosystem Services provided by rangelands and their associated water bodies would support the conservation of these resources by responsible cattle and beef producers. Society would derive the benefits of Ecosystem Services such as biodiversity, wildlife habitat, and enhanced water quantity and quality, while the Climate Leadership Plan would be helped by reduced greenhouse gas emissions through avoided carbon releases or enhanced carbon sequestration. For further information and examples of PES, please see the section “Ecosystem Service Programs”

Climate Leadership Opportunities

The greenhouse gas (GHG) emissions of the Canadian beef industry represent 3.2% of the total GHG emission in the country and the Alberta beef industry contributes about half of these emissions. The Canadian beef industry is a global leader in mitigating the environmental footprint of beef production and research shows that the GHG footprint of our industry declined by 15% between 1981 and 2011. In addition to the enormous benefits of carbon sequestration in grasslands, there are opportunities for further reductions in the GHG footprint through improved production efficiency, enhanced manure management, and energy efficiency. Since the beef industry already has made considerable progress on managing greenhouse gas emissions, further reductions will require investments in research and innovation, policies and programs that encourage the implementation of beneficial management practices, and support for awareness, education, and technology transfer actions.

Strategic investment of the funds raised by the carbon levy could reduce the impacts of the Climate Leadership Plan on the competitiveness of the Alberta cattle and beef industry and support continual improvement in our GHG footprint. *Payments for Ecosystem Services* would encourage maintenance of existing rangelands and conversion of marginal cropland to grass. *Investments in research* on improved genetics, feed quality, digestibility, and animal health can lead to the double benefits of enhanced production efficiency for better competitiveness and reduced GHG emissions. *Programs supporting energy conservation and economical renewable energy on farms* are also beneficial for both producers and the environment. There also are opportunities for *conservation offsets, improved carbon credit protocols, and research on improved manure management to reduce GHG emissions.*

The ABP Policy Position on Climate Leadership represents our commitment to working collaboratively with the Government of Alberta on the successful and effective implementation of Alberta’s Climate Leadership Plan. This paper contains detailed information on the policy positions and a number of recommendations for the Alberta Climate Leadership Plan. Many of the recommendations require funding that would represent a good investment of the revenue generated by the carbon levy. Although the paper contains a more complete explanation of our

recommendations and more recommendations than are listed below, the key recommendations are summarized here for quick reference.

Summary of Key ABP Positions and Recommendations

- The Alberta government **invest in research, innovation, education, extension, offsets, and credits** on production efficiency, manure management, information sharing, and best management practices to reduce the environmental footprint of beef production.
- The Alberta government **develop conservation and stewardship** programs and initiatives that support the preservation of grasslands, especially native rangelands, and conversion of marginal cropland to perennial forages, while recognizing the need for responsible grazing by livestock to maintain healthy rangelands and riparian areas.
- The AB government support the creation and further development of **payment for ecosystem services (PES) programs** that will provide incentives for best land and water management practices to preserve critical agricultural land, improve environmental health, and build resiliency into the agriculture sector.
- AB government continue to **invest in research to improve forage and feed quality, digestibility, animal and crop genetics, and animal health** for increased production efficiency and reduced environmental impact per kg of beef produced.
- The Alberta government maintain or increase **funding** for enhanced **beef and forage research**, restored critical academic and government **research capacity**, and programs supporting implementation of **environmental stewardship practices**.
- The Alberta government invest in **on-farm and industry programs and initiatives** on **energy efficiency** and **economical renewable energy** to reduce the impact of increased energy costs, especially energy for the feedlot and processing sectors.

Alberta Beef Producers Policy Position on Climate Leadership

This paper provides further explanation and documentation supporting the positions and recommendations in the Executive Summary of the Alberta Beef Producers (ABP) Policy Position on Climate Leadership. A significant amount of the information in this paper has been taken from the Canadian Cattlemen's Association (CCA) Draft Climate Change Policy. ABP acknowledges the good work that CCA has done on their policy and thanks CCA for allowing us to use this information. The ABP Climate Leadership documents have been reviewed by the ABP Environment Committee, the ABP Board of Directors, and a number of ABP staff members.

The Alberta and Canadian Beef Industry

Alberta has about 40% percent of the total Canadian beef herd which includes 40% of the cow herd, and about 70% of the finishing or feedlot sector. Each has a different contribution per head to GHG production. On average Alberta's cow-calf grazing herd contributes about 80% of beef's GHG emissions; the feedlot sector feeding high grain rations about 20%.

Agriculture provided about \$4.89 billion or 1.3% of the total Gross Domestic Product (GDP) in the province in 2014. Of the total net farm cash receipts of \$12.9 billion (or 22.4% of Canada's production) cattle and calves posted \$4.80 billion in sales or 37% of the total¹. This does not include sales from other farm sectors for pasture land, forages or feed grains. Estimations of the total economic impact of Alberta's beef sector at the farm level was \$ 8.4 billion (Kulshreshtha et al., 2012). Agriculture value-added products had sales of \$14.6 billion in 2015; about 50% of this was from the meat sector.

Alberta has an agriculture base of 21 million hectares or 31% of Canada's total, including 44% of the pasture and forage land in the country (Statistics Canada). Alberta rangelands are extensive and diverse. Alberta grasslands area have been estimated at 5.7 million hectares and includes natural grassland in million hectares as natural grasslands (4.82), crown and PFRA pasture (0.46), military grassland (0.30) and parks grassland (0.080)². These are in five natural regions (as percent of total):

- Grassland Natural Region (51%)
- Parkland Natural Region (21%)
- Foothills Natural Region (6%)
- Rocky Mountain Natural Region (part of above 6%)
- Boreal Forest Natural Region (22%)

The Canadian beef industry continues to thrive, producing about 2% of the world's beef and contributing an estimated \$33 billion CAN to the Canadian economy. Of this about \$8.4 billion is contributed to Alberta's economy, or about 25% of the total (Kulshreshtha et al, 2012).

Finding ways to grow more food without increasing greenhouse gas (GHG) emissions is a

¹ Highlights of the Alberta Economy, Alberta Economic Development and Trade, 2016.

² Bailey, A. W., McCartney, D., Schellenberg, M.P.: Management of Canadian Prairie Rangeland, Agriculture and Agrifood Canada, 2010.

challenge that farmers face around the globe. After all, greenhouse gas emissions represent a loss of costly inputs, both nutrients and feed energy, ultimately resulting in inefficiencies in agricultural production systems. Farmers and ranchers are also the ones inevitably faced with adapting to the weather, often witnessing first-hand the true impacts of our changing climate.

Through the provision of government and industry support for sustainable farming practices that are resilient to climate change, the Canadian beef sector will be able to successfully reduce its GHG footprint, while providing food for the world's growing population.

Greenhouse Gas Emissions in Canadian Beef Production

Canada's total agriculture GHG production is 59 MT, accounting for 8% of Canada's total GHG footprint. The Canadian beef industry's total GHG production is 23.38 MT, accounting for 3.2% of Canada's total, including meat from dairy animals and manure (Environment and Climate Change Canada, 2016). Alberta's share of this is about 12 MT or 63% of the total beef sector. Canadian beef has one of the lowest GHG footprints per unit of production in the world at 12.0 kg CO₂ equivalent per kilogram of live weight, less than half of the world average (Legesse, 2015; Gerber et al, 2013). The greenhouse gas footprint in the beef industry is dominated by methane, representing 73% of the total footprint (Legesse, 2015). Methane is primarily produced through enteric fermentation – a process that occurs when any ruminant (e.g. cattle, deer, elk, sheep, etc.) digests feed. The remainder is produced from nitrous oxide from manure and crop fertilizer's nitrogen volatilization, and from carbon dioxide due to fossil fuel consumption.

The Canadian beef industry also conserves rangelands which store carbon. To understand the full value of conserving grasslands and the GHG footprint of the Canadian beef industry, one must appreciate the amount of carbon sequestered in grasslands.

The definition of Climate Smart Agriculture (CSA) is “agriculture that sustainably increases productivity, enhances resilience (adaptation), reduces/removes GHGs (mitigation) where possible, and enhances achievement of national food security and development goals” (FAO, 2016). The Canadian Cattlemen's Association (CCA) recommends utilizing the framework for CSA to guide the GHG reduction strategies in Canada's beef industry. Industry and government alike should focus on sustainably increasing productivity, enhancing resiliency, and mitigating GHGs where possible.

Climate Leadership Positions and Recommendations

Reducing the Environmental Footprint of Beef Production

Reductions in the beef industry's environmental footprint have largely come through technologies that improve production efficiencies. A key pathway for CSA success is to find ways for sustainable intensification that offer multiple-win solutions in economic, climate, environmental, and social aspects of animal production. Between 1981 and 2011, the Canadian beef industry reduced its GHG footprint by 15% through advancements in technology and management that enabled industry to produce the same amount of beef in 2011 compared to 1981, all with 29% less breeding stock, 27% fewer slaughter cattle, and 24% less land (Legesse

et al, 2015). Future improvements in feed resources, nutritious diet supplements, improvement of animal health technologies, and manure management will enable further reductions. Supporting research and the subsequent outreach to producers regarding best management practices is the key to further increasing productivity.

The Canadian beef industry is a global leader in mitigating the GHG footprint of beef production. However, further opportunities for reduction remain through continued innovation, research, and information sharing. The Food and Agriculture Organization (FAO) of the United Nations report, *Tackling Climate Change Through Livestock*, estimates that if all livestock producers achieved the production efficiency of the top 10 or 25 per cent of producers, total emissions could be reduced by 18 to 30 per cent (Gerber et al, 2013). This estimation is supported by Canadian-specific research, which has shown emissions could be cut by 20% through mitigation strategies and another 5% could be cut from reducing food waste by cutting food waste in half (Beauchemin et al 2011; CRSB, release pending).

ABP Key Recommendation:

- **The Alberta government invest in research, innovation, education, extension, offsets, and credits on production efficiency, manure management, information sharing, and best management practices to reduce the environmental footprint of beef production.**

Conservation and Stewardship

As cattle are the primary users of Alberta rangelands, ABP strongly supports initiatives that encourage conservation of native or tame perennial rangelands and water bodies, so long as *cattle are allowed to continue to responsibly graze these lands*. Cattle producers in Alberta have learned through experience that environmental stewardship, especially on land and water resources, are necessary for long term sustainability and resiliency of the operation and cattle farming in general.

Research and demonstration has shown that cattle ranching can play a large role in maintaining healthy rangelands which provide a wealth of ecosystem services to society. These can include promoting biodiversity, wildlife habitat (including for Species at Risk), water filtration, nutrient recycling, and substantial carbon sequestration. Dr. Edward Bork at the University of Alberta notes that if valued at \$15 CAD per tonne, carbon stored in prairie grasslands alone would be valued at \$4.3. billion CAD and that over \$11 billion CAD has been lost in the Parkland region due to conversion to cropland, industrial and urban development. Losses from conversion of rangeland to cropland can result in up to 50% losses of Soil Organic Carbon (SOC). Intact native grasslands can sequester from 50 to 200t C per ha. Perhaps more importantly, once grasslands are converted to another use, they are unable to fully recover their carbon stores, even if re-vegetated in the future. There are approximately 6.4 million ha of native grassland and 2.4 million ha of tame pasture, which are primarily stewarded by beef producers.

ABP continues to support research and programs in environmental stewardship including the Cows and Fish Program, the ABP Environmental Stewardship Award, the Oldman Watershed Council, other watershed and grassland associations, and many other initiatives. We encourage

government to continue to support conservation through proper grazing management, beneficial management practices, and stewardship initiatives. This can be done through programs such as Growing Forward and also increased support for research in cattle-environment interactions.

ABP Key Recommendation:

- **The Alberta government develop conservation and stewardship programs and initiatives that support the preservation of grasslands, especially native rangelands, and conversion of marginal cropland to perennial forages, while recognizing the need for responsible grazing by livestock to maintain healthy rangelands and riparian areas.**

Enhancing Resiliency and Climate Adaptation

Healthy rangelands (both tame and native), riparian areas, and soils also help mitigate severe weather such as droughts and floods. For a resilient agriculture industry, it is important that government policy supports practices and research that improve resiliency. This can be done through advancing the protection of ecosystem services through ecosystem service programs, developing and maintaining disaster and forage insurance programs, and through further investment and development in infrastructure.

Ecosystem Service Programs

Continually advancing the understanding of, and support for, the ecosystem services delivered on this landscape will have positive impacts that resonate for all citizens.

Payment for Ecological Services (PES) programs are a fee-for-service arrangement that pays for public goods that are otherwise under-delivered or not delivered in the market place. Some examples of ecological services being delivered on private lands include:

- Expanded riparian buffer zones that provide critical wildlife habitat and improve water quality,
- Creating, restoring or maintaining wetlands, which improve water quality and protect against flooding,
- Managing native prairie to enhance critical habitat for Species at Risk,
- Establishing pollinator hedgerows to provide habitat for pollinators, and,
- Replanting grasslands to sequester carbon.

PES programs offer payments to farmers or landowners in exchange for managing their land to provide some sort of ecological service, often called a fee-for-service. This system incentivizes the provision of environmental services through conditional payments to voluntary providers. Programs such as these promote the conservation of natural resources in the market place. This can lead to tangible economic benefits to stakeholders through cost avoidance. A tangible example can be seen in New York State, where it was possible to avoid building a \$6-billion-dollar water treatment plant with \$250 million/year upkeep costs by paying for the delivery of ecological services from the land upstream (for a fraction of the cost).

We encourage the government to support the creation and further development of PES programs that will improve the environmental health of Alberta's landscape and build resiliency into the agriculture sector. An example is the Alternative Land Use Services (ALUS) program³. These programs will be most successful if they are incentive-based, community delivered, and voluntary. They can also be delivered through increased research, tax incentives, carbon credits, or other conservation offset programs.

ABP Key Recommendation:

- **The AB government support the creation and further development of payment for ecosystem services (PES) programs that will provide incentives for best land and water management practices to preserve critical agricultural land, improve environmental health, and build resiliency into the agriculture sector.**

Consideration of gaps in reconciling soil organic carbon (SOC) valuation

The value of carbon storage could be best captured by a public policy or a private mechanism. But in addition to engaging with policy-makers the economics of pursuing premiums for ecosystem services through value-added markets (e.g., C-friendly beef) needs to be explored. These include:

- consensus on how baseline levels of C storage should be established, and relied upon during policy formulation;
- farm-/ranch-level information on C storage, including the landowner's experience (e.g., adaptive management actions, goals, motivating factors, etc.);
- articulation of the business-as-usual path for western Canadian grasslands (and the carbon currently stored internally), and calculation of the opportunity costs to producers for not following this path;
- societal awareness of the value of C storage and other ecosystem services from grasslands, and a political will to internalize these values;
- understanding of society's willingness-to-pay for various ecosystem services, and the costs and benefits of paid ecosystem service programs (for landowners, and others);
- information on transaction costs associated with various potential market mechanisms that reward C storage and/or other ecosystem services;
- rationale for coupling the value of ecosystems with, or keeping them separate from, the food market; and,
- funding for research that bridges science, economics, and policy considerations about paid ecosystem service programs .

These should be resolved for proper use of GHG management to minimize agriculture's contribution and reduction. Alberta Beef Producers also recommends that:

- Carbon storage in grasslands should be considered alongside storage in agroforestry and cropping systems (for which a market already exists), rather than in isolation;

³ ALUS is a community developed, farmer delivered program that gives Canadians the opportunity to play an active role in building a healthier environment by providing support to farmers and ranchers to enhance and maintain ecosystem services.

- Investment into research of emissions and storage of other greenhouse gases in grasslands along with carbon; and,
- Consideration must be given to whether market mechanisms should be aimed at optimizing or maximizing C storage, and how the approaches to achieving each of these outcomes might differ.

Disaster Response Programs and Forage Insurance

As climates change, the risk of severe weather events also increases. Droughts, floods, and other severe weather events significantly impact the economic and environmental performance of the agriculture industry. As these weather risks increase, it is imperative to have tools available to producers to help manage risk during these trying times.

ABP believes that there needs to be sufficiently funded provincial and national agriculture risk management programs that are delivered consistently across all jurisdictions and do not create a competitive imbalance between agriculture sectors or regions.

Since the discovery of BSE, ABP and the Canadian Cattlemen’s Association (CCA) have been lobbying for a true disaster response program. AgriRecovery has been delivered in several areas in Canada, however room for improvement of this program remains, including the creation of clear triggers and reference materials regarding what the program will and will not cover. Historically, the dependence of this program on political decision making during the disaster has compounded confusion in challenging times and made planning for disasters enigmatic for the producer community. Alberta producers need not be put in situations where they are waiting to do what is best for their operations because activity that predates an announcement may be deemed ineligible for reimbursement.

While the beef industry understands the benefits that an ad-hoc, provincial and/or national blanket framework provides, governments should consider the different types of risk that are unique to each agricultural sector or region of Canada. For the beef industry, improved hay and forage insurance across the province that includes a “feed needs replacement” component could potentially replace some of the calls for an AgriRecovery response to weather events. ABP encourages both federal and provincial governments to continue working toward implementing AgriInsurance recommendations made by the Federal/Provincial/Territories Forage Task Team. We also recommend further beef sector liason with the Agriculture Financial Services Corporation (AFSC) for improved hay and forage insurance and enhanced business risk management programming.

Infrastructure Investment

Increased investment into infrastructure is another proactive approach to provide long term mitigation of disaster causes. Constructing improved irrigation systems and flood structures such as dams/storages or outlets are examples of worthwhile projects. A provincial and national dialogue about effectively managing water resources, both during times of excess or short supply, may be required.

Mitigating Greenhouse Gas Emissions

Emissions of GHG in beef production are a loss of valuable inputs such as nitrogen, organic matter, and energy. With limited and costly inputs, the beef industry has both economic and environmental drivers to reduce our GHG footprint. Increasing the overall productivity and efficiency of farm systems, and recovering energy and nutrients, are key strategies to reduce the emissions intensity of livestock production. The GHG intensity of beef production in 2011 (12.0 kg CO₂e/kg live weight) was 14% lower than that in 1981 (14 kg CO₂e/kg live weight). Increases in reproductive efficiency, average daily gain, slaughter weight, and crop yields were among the factors that contributed to the decrease in emission intensity over time (Legesse et al, 2015). Continued improvements in reducing the GHG footprint of beef production can be made through strategic and continued focus in key areas. Despite the fact that Canadian beef production is already highly efficient, emissions of GHG could be further reduced by up to 20% if multiple strategies were used across the primary production sector (Beauchemin et al, 2011). Closing the gap between high and low emitters within the Canadian production system will have meaningful impact.

1. *Improving feed quality and digestibility*

Feeding low-quality and low-digestibility feeds (such as grass and hay forages) result in higher intestinal GHG emissions from beef animals versus feeding higher quality, energy dense feeds (such as barley and corn). The main proportion of GHG emissions from the Canadian beef system come from the cow-calf sector of the industry, as enteric emissions are heightened due to the consumption of lower quality feeds in this stage. Reducing the amount of nutrients that are excreted in manure can also contribute to reduced GHG production by manure. Improvements in feed quality, digestibility, and better matching protein supply to animal requirements will have meaningful impacts on reducing the GHG footprint of the beef industry (Reducing Greenhouse Gas Emissions from Livestock: Best Practice and Emerging Options, 2013).

2. *Improving animal health and genetics*

Increasing animal health and improving genetics can extend the productive life of animals, improve reproduction rates, increase productivity, increase an animal's feed efficiency, reduce mortality rates, reduce the age of first reproduction, and reduce the prevalence of common diseases. These improvements reduce the number of animals kept for maintenance rather than production and subsequently, condense the GHG intensity of beef production in Canada. In addition, research in feed efficiency in Alberta has shown that cattle that are genetically more feed efficient also produce less methane (Basarab).

3. *Reducing food waste*

The Food and Agriculture Organization (FAO) of the United Nations reported that one-third of all food produced for human consumption in the world is lost or wasted each year for various reasons. Food is lost or wasted throughout the supply chain, from initial agricultural production down to final household consumption. Food loss refers to the decrease in edible food mass at the early stages of the food chain, such as production and postharvest handling. Food loss occurs primarily in developing countries. Meanwhile, food waste refers to the discard of foodstuff at the retail and consumption levels, and is more commonly observed in high-income countries.

When considering the full life cycle of Canadian beef meat production, meat waste is one major source of the impact of the downstream stages (i.e. from processing down to the consumer level). In Canada, it is estimated that for every 1.24 kg of bone-free meat that leaves the packers, only 1 kg is consumed (CRSB, 2016 release pending).

The total GHG footprint of the Alberta beef industry could be reduced by 5% by cutting food waste in half. Efforts should be made to better understand the context of food waste and steps taken to prevent losses. We would encourage Alberta government investment in research and public education programs related to reducing food waste.

ABP Key Recommendations:

- **AB government continue to invest in research to improve forage and feed quality, digestibility, animal and crop genetics, and animal health for increased production efficiency and reduced environmental impact per kg of beef produced.**

Research and Innovation Support

As mentioned several times throughout this paper, ABP strongly supports the continuation of and further investment in beef and cattle research to advance productivity gains with positive outcomes related to reducing our environmental footprint, on both a provincial and national scale. It is important that research and innovation supported through ALMA, AI Tech Futures, and AI Bio continue to be maintained within the Alberta government. In addition, we support the continuation and enhancement of the Growing Forward programs that promote stewardship practices to improve environmental management and reduce GHG emissions.

Beyond these programs, a key priority is to ensure critical government and academic research capacity and infrastructure is restored and maintained. A significant number of senior researchers and technical staff are set to retire over the next three to five years. There must be appropriate transition planning and training of new researchers so that critical research programs are not negatively impacted. Likewise, remaining beef and forage research infrastructure needs to be maintained, and in some cases modernized, to ensure researchers have access to relevant technologies and facilities as required in order to address key research priorities in a timely and reliable manner.

ABP Key Recommendation:

- **The Alberta government maintain or increase funding for enhanced beef and forage research, restored critical academic and government research capacity, and programs supporting implementation of environmental stewardship practices.**

On-farm Energy Efficiency

ABP supports energy efficiency programs especially if they can achieve the “double dividend” of reducing energy use while increasing productivity or reducing production costs. As energy prices rise, for both electricity and natural gas, we support programs that will reduce energy use (and thus costs) such as insulation, lighting, furnace, and water heating upgrades.

Alberta's beef producers already work very hard to reduce energy consumption, as a means of reducing costs of production. This has been especially true for using energy efficient stock water tanks or highly efficient irrigation systems. In addition, solar power has been implemented for off-stream water tanks, remote water pumps, and electric fencing for increased grazing and riparian management. Off stream solar powered watering systems are especially important as they provide clean water for cattle, which maintains healthy animals, as well as enhance the health of the riparian area for biodiversity, wildlife habitat, water storage, and increased water quality for downstream users. ABP supports programs that will encourage continued use of these technologies that help to enhance the ecosystem and cattle health, as well as reduce electricity and energy use. The programs under Growing Forward 2, for example, allowed for many of these initiatives.

Lastly, ABP supports the deployment of renewable energy on the farm if the return on investment is realized in a reasonable amount of time, and there is an opportunity to generate excess electricity for diversified income streams (ie providing energy to other farms, selling excess energy back to the grid). We support the "bi-directional cumulative meter" provision under Alberta's current *Micro-generation Regulation*, and would encourage renewal of this regulation as it is set to expire Dec. 31, 2016. In addition, we would encourage government to invest in energy efficiency transitioning in the beef processing industry, as it is especially vulnerable to energy cost increases.

ABP Key Recommendation:

- **The Alberta government invest in on-farm and industry programs and initiatives on energy efficiency and economical renewable energy to reduce the impact of increased energy costs, especially energy for the feedlot and processing sectors.**

Engagement in international agriculture & climate change dialogue

An estimated 1 billion people living below the poverty line around the world derive at least part of their livelihood from livestock, and although efficiencies in developing agriculture systems may be lacking, the opportunity for improvement is significant. Ten times more women own livestock than own land and a growing body of evidence suggests that increasing women's control over assets, including livestock, has positive effects on food security, child nutrition, education, and women's wellbeing, as well as climate change.

As a global community, we must work together to continue to support the development of sustainable agriculture production systems in all regions. By addressing the gap between producers and production systems with the highest emission intensity and the lowest emission intensity, meaningful reductions are possible. Information sharing, problem solving, and innovation across national borders will be key to reducing the GHG footprint of livestock globally. We encourage the provincial government to continue to support international initiatives that address this gap in GHG emission intensity, such as the Global Research Alliance on Agricultural Greenhouse Gases, the Livestock Environmental Assessment Performance (LEAP) Partnership and the Global Agenda Towards Sustainable Livestock.

Conclusion

This paper is meant to provide an overview of Alberta Beef Producer policy position on climate leadership which is primarily focused on environmental conservation and stewardship. There will be challenges with addressing environmental issues, yet there may be opportunities for the industry to increase the health of our environment while also reducing costs of production or generating further revenue. In addition, as new information becomes available and gaps are identified, this policy position will be revised and updated to address newly identified challenges and opportunities in climate leadership and environmental stewardship.

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We greatly appreciate the information and documents provided by the Canadian Cattlemen's Association, as well as input from the Alberta Beef Producers Environment Committee, Alberta Agriculture and Forestry, and Alberta Environment and Parks.

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