Alberta Grains

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Re: Renewable Energy Projects on Agricultural Land Questionnaire

Alberta Grains

Alberta Grains is a farmer funded and directed organization that represents the interests of over 18,000 wheat and barley farmers across Alberta. We work within our mandate under the Alberta Marketing of Agricultural Products Act to direct funds toward the long-term economic sustainability of Alberta's grain farmers through investments in activities and programs in areas related to research, agronomy, extension market development, policy development, and advocacy.

This letter is in response to the survey issued by Alberta's Department of Agriculture & Irrigation on July 24th regarding the development of renewable energy projects on agricultural land. Following consultation with our farmer members, we are pleased to provide our feedback below.

Agricultural Co-Existence with Renewable Energy Projects

Measurement of agricultural productivity:

Gross revenue may indicate earnings potential but does not fully capture agricultural productivity. Certain crops can obtain higher prices in the market, although they may require an increased use of inputs. Crop prices fluctuate from year to year, making it an unreliable indicator. Gross revenue also can only be limited to one crop, as every crop has a di^erent market price. Since farmers use crop rotations (as a best management practice), the yearly gross revenue will inevitably fluctuate on the parcel of land. An accurate measure of productivity must reflect the inputs required for a certain level of crop output and be neutral to crop type.

A more descriptive assessment of productivity is net profitability. Farmers maximize their crop selection based on their operational circumstances, such as soil, climate, landscape, and water availability, which in turn impacts the final production yield. Based on these circumstances, farmers weight the cost of inputs to the obtainable price for a crop in the open market. Profit accounts for crop price, final yield, and input requirements, providing an accurate measure of the productivity of the land. Furthermore, it would be important to

take an average for a certain period, as yields can be negatively impacted by poor growing conditions. An average of a parcel's net profitability accounts for crop rotations, yearly variations, and cost of production – ultimately demonstrating the productivity and potential of a parcel of land.

Can crop production and solar power (or wind power) development co-exist on the same parcel of agricultural land?:

Alberta Grains does not believe, due to the evidence available, that crop production can co-exist with renewable energy development on the same parcel of land. Successful crop farming in Alberta typically requires large machinery and large, continuous tracts of land. As farmers face low margins with the crops that are successfully farmed in Alberta, these producers rely on economies of scale to increase their financial return. These features of crop farming in Alberta makes co-existence with renewable energy projects on prime agricultural land impractical and risky.

One of the main concerns with solar power plants installation, are the potential long-term consequences for the soil. Concerns raised by farmers include increased pests (such as grasshoppers), the spread of weeds like kochia, and the inability to use aerial applicators and changes to soil hydrology and microclimate that could disrupt farming conditions. Farmers often cited the lack of planning or evidence from proponents to manage and mitigate these risks. The Tannas Report, as quoted in Module A, indicated other problems such as soil compaction, erosion, and improper mixing of soil. Another producer concern is the impacts to equipment movement on roads from increased tra^ic and reduced visibility. Due to these risks and lack of information, farmers are concerned with renewable energy projects on farmland.

Although some cite agrivoltaics as a proposed solution for agricultural co-existence, this approach presents significant challenges in Alberta. Utility scaled solar projects can remove many acres from crop production and requires a 20-to-30-year commitment, taking out many acres for long-periods of time. Wind power generation itself does not take many acres out of production, but it does require the development of access routes which removes farmland and increases fragmentation of the land. Fragmentation increases fuel costs as greater distances must be travelled which ultimately reduces margins for farmers.

Agrivoltaics, while promising in other regions according to Tannas, lacks supporting evidence for successful integration with Alberta's unique climate and soil. Alberta-specific research, especially long-term impacts to the soil is essential before considering this practice viable, as current data is insu^icient to prove its compatibility with existing crop farming practices. There needs to be a requirement for long-term study and understanding of potential impacts of these projects in the areas in which they are seeking to establish. Specifically, studying potential implications on hydrology, weather patterns, reflections, weed and pest development, along with the impact all adjacent farmers. Currently, these project proponents are not required to provide management plans related to these issues.

Indeed, during our consultations, we heard of several projects that have not accounted for impacts to adjacent well-sites (hydrology), liability issues related to reflection, weed and

best management, and concerns with using aerial sprayers to deal with weed issues because of concerns related to liability on the solar panel infrastructure.

To ensure the credibility of agrivoltaic practices, renewable energy developments on prime agricultural land should be required to provide verifiable evidence to the AUC demonstrating successful co-existence with agriculture.

Many of our producers are concerned that a project proponent (i.e. Zesties) furnishes a set of plans and then goes on to sell the project to a new owner. These plans are seen by intervenors, but they are seldom comprehensive, do not provide detailed economic analysis or feasibility studies. There is great uncertainty of which department or bureau is responsible for ensuring that these plans are followed. Many producers ask, "Will there be a mechanism in place to audit 'co-existence', ensure the following/continuity of the agrivoltaics management plan?" It is unknown if there is analysis of the cost-benefit of the co-existence plan against the value of maintaining the productive crop land. Once crop land is out of production for the project life, it is unknow what the probability is that the land can return to the same productive quality.

Our farmers argue that land apt for crop production (Class 1, 2, 3 and 4 in irrigated areas) is not 'best suited' for animal production. There needs to be a distinction between what the land is presently suited for (i.e. agricultural crop production) and the agricultural coexistence plan of the proponent. For example, if the plan is to graze sheep on the project area that is currently rated Class 3 and currently being used for crop production – shifting to animal grazing should not be deemed 'co-existence' as it is a fundamental shift in the agricultural use of that land. Co-existence must be determined in the context of the region's attributes with respect to agrivoltaics – which includes a proof of economic viability. AFSC could potentially help with this process since they collect this type of data as part of their AgriInsurance and AgriStability programs.

However, there is acknowledgment that renewable energy projects can co-exist with crop production under certain conditions. An oft-cited example is the use of the dryland corners in an irrigated section, that are not typically farmed. Some panels or turbines can be placed in these small corners and not impact crop production. The farm operation can even use the power generated from these sources to power their irrigation pivots and other aspects of their farming operation.

<u>Minimum level of agricultural productivity that must be maintained?:</u>

Alberta Grains believes that there should not be any reduction in crop production from the installation of renewable projects on prime farmland. Our directors and delegates argued that many countries are heavily reliant on Albertan agricultural products and removing productive agricultural acres out of production will have negative consequences that will reverberate across the world.

Productive Agricultural Land

If a county or municipal district doesn't have any Land Suitability Rating System (LSRS) Class 1 or 2 land, the next highest classification should be considered as the most productive agricultural land?:

If a municipality does not have LSRS class 1 or 2 land, the next highest classification should be considered as the most productive land. However, there are some concerns with only protecting LSRS class 1 and 2 lands. Figure 1 lists the percentage of agricultural land by LSRS class, as a percentage of total agricultural land in within Alberta.

Figure 1 - Agricultural Land in Alberta by LSRS class

2023	2	3	4	5	6	7
Alberta	8.6%	32.0%	18.7%	10.1%	12.0%	18.6%
South Saskatchewan	0.2%	8.9%	28.8%	31.6%	15.3%	12.1%
Red Deer	16.6%	32.2%	20.0%	14.4%	13.9%	2.7%
North Saskatchewan	44.6%	32.0%	12.2%	5.9%	2.7%	2.4%
Lower Peace	5.3%	70.2%	8.6%	6.2%	6.1%	3.6%
Lower Athabasca	0.0%	86.7%	1.6%	3.7%	2.7%	5.2%
Upper Peace	12.4%	53.8%	12.8%	4.7%	4.1%	12.1%
Upper Athabasca	12.4%	53.8%	12.8%	4.7%	4.1%	12.1%

Source: https://open.alberta.ca/publications/annual-report-land-use-changes-in-alberta. Accessed July 29, 2024.

The data shared by the GoA, indicates there is no class 1 land in Alberta. Although climate considerations may impact classification in the future, based on current publicly available data, class 1 does not exist in Alberta. Within the province, 8.6% of the land is rated as class 2, but it is not evenly distributed across the province. The South Saskatchewan region only has 0.2% with LSRS class 2 rating, which would mean that 99.8% of the land in that region will be unprotected. LSRS classification is a useful tool to assess the capability for sustained agricultural production on a parcel land by identifying the limitation to crop production.

As there are many di^erent land classification tools, LSRS should be the only one classification system that is used in evaluating soil quality at a high level. AGRASID is e^ective in performing cursory analysis on the parcel's land classification. Farmers noted that a soil sample should be a necessary step to confirm the land classification. In one case we are aware of LSRS classed the landowners land and adjacent land as Class 3, the intervenor took soil samples to determine that the land was Class 2 – this held up in the AUC process. The LSRS is a good foundation but must include soil samples for verification as weather and other factors can change the classification.

As land in a parcel is not homogeneous, certain acres can have varying agricultural potential. Furthermore, the Tannas and Matrix Solutions reports, both stated that land can be more productive than its land classification depending on the farming practices and inputs. This means that although LSRS is a useful tool to provide an initial indication of the land's potential, it will be impactful to study the land further in-depth to provide a holistic assessment. As a result, a proponent for a renewable power plant should be responsible in

providing physical evidence that the project's proposed area is not being placed on prime agricultural land.

Alberta Grains continues to call that land classified from 1 to 3 be protected as prime agricultural land. Farmers face greater and greater limitations in entering the sector, or to expand their farm operation. As figure 2 below shows, over 42,000 hectares of class 2 and 3 agricultural lands has been lost over this past decade. As land continues to rise in prices, due to greater competition from urban sprawl, industrials and renewable power plants - ultimately leading to less available productive farmland and inability to expand farming operations.

Figure 2 – Land Loss in Main Agricultural Regions, in hectares, from 2011 to 2023

REGION	Class 2	Class 3
South Saskatchewan	-1375	-1086
Red Deer	-1902	-782
North Saskatchewan	-22845	-4791
Upper Peace	-701	-9876
Total	-26823	-16535

Source: https://open.alberta.ca/publications/annual-report-land-use-changes-in-alberta. Accessed July 29, 2024.

To ensure the long-term viability of the sector, reducing the removal of farmland is critical. As utility scale renewable energy projects are part of this concern, it is important there is regulation to ensure the orderly development of renewable power plants so that farmland is well protected.

Most rural communities are built and thrive on agricultural activities. Farming and ranching families are often the backbone of these communities and strong economic contributors. While solar may provide a tax base, over the long-term it provides very little economic benefit to communities. If productive land is lost in a community, you lose farming families, new entrants to farming and the succession of next generations. This must be a consideration in the project approval process – what is the economic impact on the community.

Irrigability

Which characteristic should exempt a parcel of land from a required irrigability assessment?:

The Government of Alberta has significantly invested to establish irrigation within the province. Presently, the GoA is investing in irrigation e^iciency to improve water-use which will increase water availability for irrigation. The number of acres that can be irrigated is limited by the amount of water that is available. It is valuable to recognize that there is more demand for irrigation than there is supply of water, since it is an indispensable tool to improve the productivity of the soil. Investments in irrigation e^iciency will ease irrigation demand pressures, reducing soil limitations in the region and further enhancing agricultural productivity.

Alberta Grains has reservations with responding with a singular response from the list of answers provided within the survey. Alberta Grains is concerned about the removal of irrigation infrastructure on farmland and the potential removal of parcels of lands that would be prime candidates for irrigation. Most of the land in the South Saskatchewan region is LSRS class 4 and 5, and these parcels could be cursorily considered as agricultural land with many limitations. However, irrigation enhances their productivity, and in practice, increases their land classification. Acres available for expansion are not uniform across all irrigation districts, but many districts are looking into expansion. Parcels in these regions should not be prematurely neglected as prime agricultural land due to their lower LSRS rating.

Regions that have land available for irrigation or are being considered for irrigation expansion, should have irrigation land classification done in conjunction with soil quality assessments. For example, there are new irrigation districts that may be formed in the future. Currently, there is an ongoing research project for the MD of Acadia & Special Areas to study the viability of irrigation in the region. As it is not an o^icial irrigation district, an irrigation land assessment would not be required – despite the potential. This will ensure that farm acres with irrigation potential will be recognized, and a parcel's agricultural potential will receive a holistic assessment.

Final Thoughts

What is your overall level of concern about having agricultural and utility scale renewable energy production on the same parcel of land?:

Alberta Grains has a high degree of concern with the lack of regulation regarding the development of renewable energy projects on prime agricultural land. Only a small percentage of land with high agricultural potential is being protected according to today's rules. A significant portion of agricultural production takes place on LSRS class 3 land, and Alberta Grains argues that this class be included to the exemption solely given to Class 1 and 2 lands. Especially as many regions in Alberta have a small amount of class 2 land and no o^icial class 1 land, it ultimately leaves many productive acres at risk.

The installation of utility scale solar power plants on agricultural land can impact both the parcel on which it is situated and adjacent farming operations. Some of our producers indicated, through their own experience as intervenors in these projects, that these proposals did not account for factors that are impactful to farming. Soil hydrology, pests and weeds management are significant issues that farms must navigate, and these proposals reportedly do not share their plans to negate these potential issues in a timely fashion.Furthermore, these projects can impact equipment movement on roadways and the microclimate of certain areas of a parcel. In the long-term, these projects impacts are unclear and worrisome as they can hurt soil microbiology and potentially hurt agricultural productivity.

Furthermore, there is significant concern with the viability of agrivoltaics in the Alberta context. Most proposals include the use of a sheep operation, however, there is distrust over the profitability of this livestock compared to the potential productivity of crop farming

on a similar acre. As our farmers rely on economies of scale to be profitable, agrivoltaics appears incompatible with current techniques of crop farming in Alberta. Further evidence is required to show that agrivoltaics is an efficient choice on prime agricultural soil.

Although reclamation is not within the scope of this survey, there are major concerns with respect to who will hold the securities (land and project ownership could change hands many times throughout the project life) and transparency in how the reclamation amount is determined. An independent body should determine reclamation values and hold reclamation securities.

Conclusion

Given these concerns, Alberta Grains urges the careful regulation of renewable energy projects to safeguard agricultural productivity and protect prime farmland. We appreciate your attention to our feedback and remain available for further discussion.

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