



Municipal Land Use Suitability Tool (MLUST) for Rocky View County

Nilo Sinnatamby, Tracy Lee, Kenneth Sanderson, Nicole Kahal, Diane Horvath,
Gavin Scott, and Bonnie Brunner

Document prepared for Rocky View County

Municipal Land Use Suitability Tool (MLUST) for Rocky View County

Prepared by Nilo Sinnatamby, Tracy Lee, Kenneth
Sanderson, Nicole Kahal, Diane Horvath, Gavin Scott, and
Bonnie Brunner

June 2023

Miistakis Institute
EB3013, Mount Royal University
4825 Mount Royal Gate SW
Calgary, Alberta T3E 6K6

Phone: (403) 440-8444

Email: institute@rockies.ca

Web: www.rockies.ca

Contents

Acknowledgements.....	5
Executive Summary.....	6
Where can renewable energy be developed?.....	6
What other land uses did we value?.....	6
Agriculture.....	6
Ecology.....	8
Culture.....	9
Combining values.....	11
Most suitable areas for wind and solar energy development.....	11
How to use MLUST results to develop municipal planning policy around renewable energy development.....	13
Key planning considerations.....	13
Integrating MLUST into municipal planning.....	13
Recommendations.....	14
Short Term.....	14
Long Term.....	14
Introduction.....	15
Process Background.....	15
Process Constraints.....	15
Decision Support.....	15
Scale of Use.....	16
Spatial modelling.....	16
Process Overview.....	16
Modelling Overview.....	19
Selection of Land Use Themes and Features.....	19
Feature Scoring and Buffering.....	20
Quantification of the Score.....	20
Calculation of buffers.....	21
Modelling Process.....	22
Results.....	23
Where Can Renewable Energy Development Go?.....	23
Wind and Solar No-go Areas.....	23
Settlement and Infrastructure Non-Development Areas.....	24
Potential Areas for Renewable Energy Development.....	27
What Other Land Uses Did We Value?.....	28
Agricultural Theme.....	28
Ecological Theme.....	30
Cultural Theme.....	33
Most Suitable Areas for Wind and Solar Energy Development.....	35
Utility Scale Solar Strategy Policy Discussion.....	42
Types of solar energy development.....	42
Municipal role in Utility Scale Solar project approvals	42
Case Studies: Lessons learned so far.....	43
Solar strategy development: Identifying municipality position and key planning considerations.....	43
Size and scale of projects.....	44
Planning influences.....	44
Land conversion rates and locations.....	44
MLUST integration into municipal planning.....	45

MLUST in the regional context	45
MLUST in the Municipal Development Plan	45
MLUST in the land use bylaw.....	45
Suitability of Site	46
Application Requirements	46
Notification	47
Setbacks	47
Conditions of Approval	48
Solar Energy Strategy Recommendations	49
Short Term.....	50
Long Term.....	50
Appendix A: Land Use Themes, Groups and Features....	51
Settlement and Infrastructure	51
Agricultural Theme.....	53
Ecological Theme.....	55
Cultural Theme	58
Wind and Solar Energy Development	59
Appendix B: Solar Feature Scoring Survey	61
Appendix C: Summary of Survey Results	72
Appendix D: Report on Survey Score Comparisons – Council vs. Council & Staff.....	117
Appendix E. Recommendations following workshop 2.	122
Appendix F. Spatial representation of key features	131
Appendix G: Case Studies	137

Acknowledgements

We would like to acknowledge staff from the Oldman River Regional Services Commission (ORRSC) whose prior work has informed this report:

Steve Harty

Ryan Dyck

We would like to thank Dr. Helene Wagner and post- doctoral fellows from University of Toronto for providing a species-agnostic connectivity model which was used for the wildlife movement feature in MLUST.

Thank you to Rocky View County and the following representatives:

Crystal Kissel, Reeve

Sunny Samra, Deputy Reeve

Kevin Hanson, Councilor

Don Kochan, Councilor

Samantha Wright, Councilor

Greg Boehlke, Councilor

Al Schule, Councilor

Dorian Wandzura, CAO

Byron Riemann, Executive Director of Operations

Kent Robinson, Executive Director of Corporate Services

Amy Zaluski, Director Legislative and Intergovernmental Services

Brock Beach, Acting Executive Director of Community Services

Leslie MacRae, Director of Strategy and Performance

Don Legge, Corporate Business and Development Manager

Jeff Fleischer, Manager of Operational Services

Dominic Kazmierczak, Manager Planning

Devin LaFleche, Regional Planning Strategist

Jacqueline Targett, Senior Development Officer

Jeff Grant, GIS Technician

Matt Boscarior, Executive Director, Community Services

Executive Summary

When municipal governments consider industrial scale solar or wind energy development, it immediately becomes clear that not everywhere is suitable for those activities, nor is everywhere unsuitable. For some areas it is a clear-cut ‘yes’ or ‘no’, but most areas sit somewhere on a continuum between those two extremes.

The Miistakis Institute and the Oldman River Regional Services Commission (ORRSC) applied the Municipal Land Use Suitability Tool (MLUST) to assist Rocky View County in identifying the most suitable areas for renewable energy development when considering agriculture, ecology and culture land use values.

The MLUST process took approximately six months to complete, engaged municipal stakeholders, made use of existing spatial datasets, and produced a series of map products to inform planning at the municipal scale. MLUST engaged the municipal council and staff to identify features they valued on the landscape. Each feature was scored by participants to determine a feature’s perceived value and potential conflict with wind and solar energy development. The most suitable areas for renewable energy development coincided with low value ratings of other land uses. Suitable areas for renewable energy development were also informed by removing no-go areas based on provincial, municipal and organizational regulations and non-development areas based on existing settlement and Infrastructure.

The MLUST process results in a scoring system from least suitable to most suitable for renewable development. A suitability threshold can be agreed upon by the municipality based on their preference. In Rocky View County, if a 5% suitability threshold is selected, this would reflect 4.0% of Rocky View County, or 39,030 acres (157.9 km²) as the most suitable areas for solar energy development, and 2.6% of Rocky View County, or 25,359 acres (102.6 km²) as most suitable for wind energy development.

Here, we summarize the MLUST process that resulted in the identification of utility-scale solar and wind energy development suitability areas in Rocky View County. Utility Scale solar generation projects are those which generate more than 10 MW of power and are considered power plants.

Where can renewable energy be developed?

To determine where solar and wind energy developments are suitable, we removed no-go areas as per regulations. Settlement and infrastructure areas were also removed since the MLUST process assesses utility scale development, which requires large, typically non-developed lands due to the number of acres needed. Removing the no-go and non-development areas from the settlement and infrastructure resulted in 75.5% (solar) and 46.0% (wind) of the landscape being identified as potential for renewable energy development. Next, we considered the land base suitable for wind and solar energy development in consideration of other land uses.

What other land uses did we value?

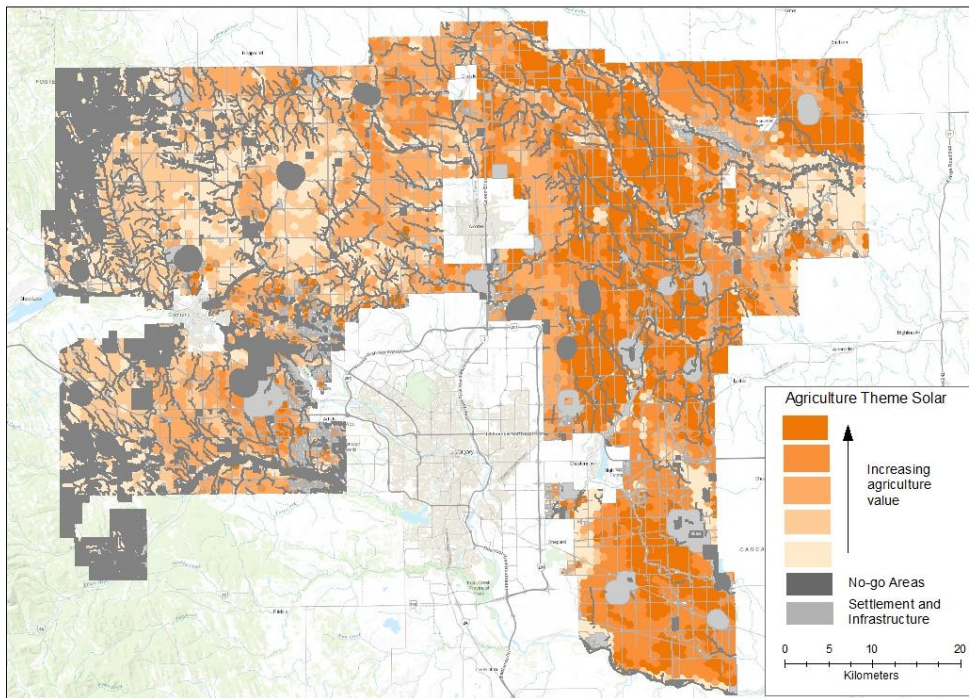
Agriculture

Municipal stakeholders identified the most valued lands from an agricultural perspective and considering potential conflict with respect to solar and wind renewable energy. They identified four agricultural features (listed in table below) and provided a value rating between 0 and 100; where higher values equate to a high agriculture value. Once agricultural features were assigned a value rating, all four features were converted into a grid roughly the size of a quarter section and overlaid. The maximum value of the six features for each grid quarter section was assigned to produce separate agricultural value rating maps for solar and wind.

Agricultural theme features and value ratings

Agricultural Theme Features	Solar	Wind
	Value Rating	Value Rating
1. Grazing Lands		
Native prairie	83	55
Tame pasture	85	55
2. Canadian Land Inventory		
Class 1	100	80
Class 2	90	75
Class 3	85	70
Class 4	70	65
Class 5	65	45
Class 6	40	40
Class 7	0	0
3. Agricultural support		
Agri-business	50	42
Agri-community	50	50
4. Irrigation		
Irrigation acres	100	100

ROCKY VIEW COUNTY AGRICULTURE THEME - SOLAR



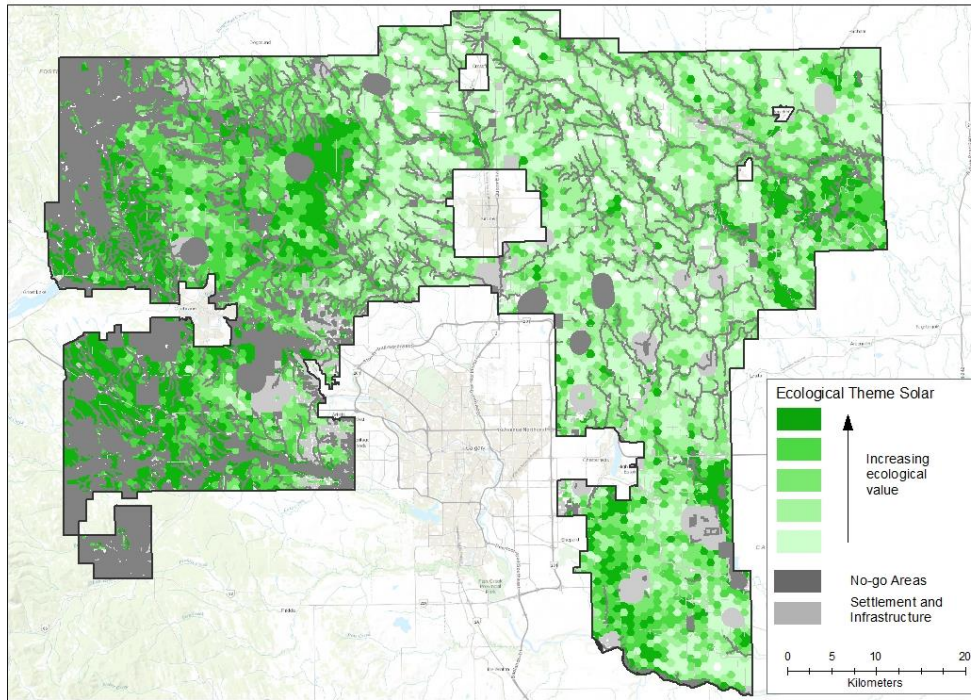
Agricultural value rating map for solar energy development (darker orange indicates increasing agricultural value); wind version can be found in full report.

Ecology

Municipal stakeholders identified the highest valued lands from an ecological perspective. They identified seven ecological features (listed in table below) and provided a value rating from 0 to 100; where higher values equate to a high ecological value. Once ecological features were assigned a value rating, all three features were converted into a grid roughly the size of a quarter section, then overlaid, and the maximum value was assigned to produce an ecological value rating map for both solar and wind.

Ecological theme features

Ecological Theme Features	Solar	Wind
	Value Rating	Value Rating
Wildlife Habitat		
Key wildlife and biodiversity zone	82	73
Native grasslands	100	100
Wildlife movement areas	73	68
Riparian	78	62
Waterbodies		
Un-named lake	64	38
Ground water aquifer re-charge	Data gap	Data gap
Wetlands		
Group 1: wetland area = very high	70	70
Group 2: wetland area = high	50	50
Group 3: wetland area = medium	30	30
Group 4: wetland area = low	10	10
Group 5: wetland area = very low	0	0
Groups 6-10 = extremely low	0	0



Ecological value rating map for solar energy development (darker green indicates increasing ecological value); wind version can be found in full report.

Culture

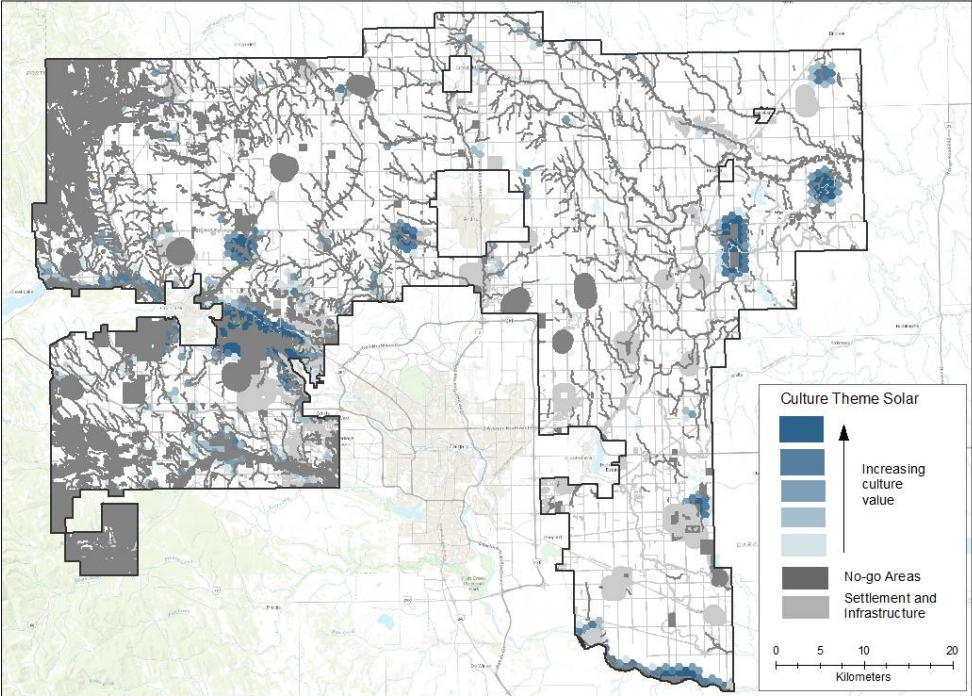
Municipal participants identified the most valued lands from a cultural perspective. They identified seven scenic features and three historic resource classes (listed in table below) and provided a value rating from 0 to 100, where higher values equate to a high cultural value. Once cultural features were assigned a value rating, all features were converted into a grid roughly the size of a section, then overlaid and the maximum value was assigned to produce a cultural value rating map for both solar and wind.

Culture theme features

Cultural Theme Features	Solar		Wind	
	Value Rating	Buffer	Value Rating	Buffer
1. Scenic Resources				
Wearmouth (Jumpingpound) Buffalo Jump	72	1000	68	1100
Cemeteries	52	0	25	0
Historic schools	Data gap		Data gap	
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	81	1100	80	1200
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	67	1000	58	1000
Calgary Parks (Haskayne, Bearspaw)	75	900	71	1100
Provincial habitat area (Perrenoud Wildlife Habitat Area)	77	100	71	100

Cultural Theme Features	Solar		Wind	
	Value Rating	Buffer	Value Rating	Buffer
2. Historic Resource Value				
HRV class 3: contains a significant historic resource that will likely require avoidance	73	n/a	61	n/a
HRV class 4: contains a historic resource that may require avoidance	65	n/a	56	n/a
HRV class 5: high potential to contain a historic resource	60*	n/a	50*	n/a

ROCKY VIEW COUNTY CULTURE THEME - SOLAR

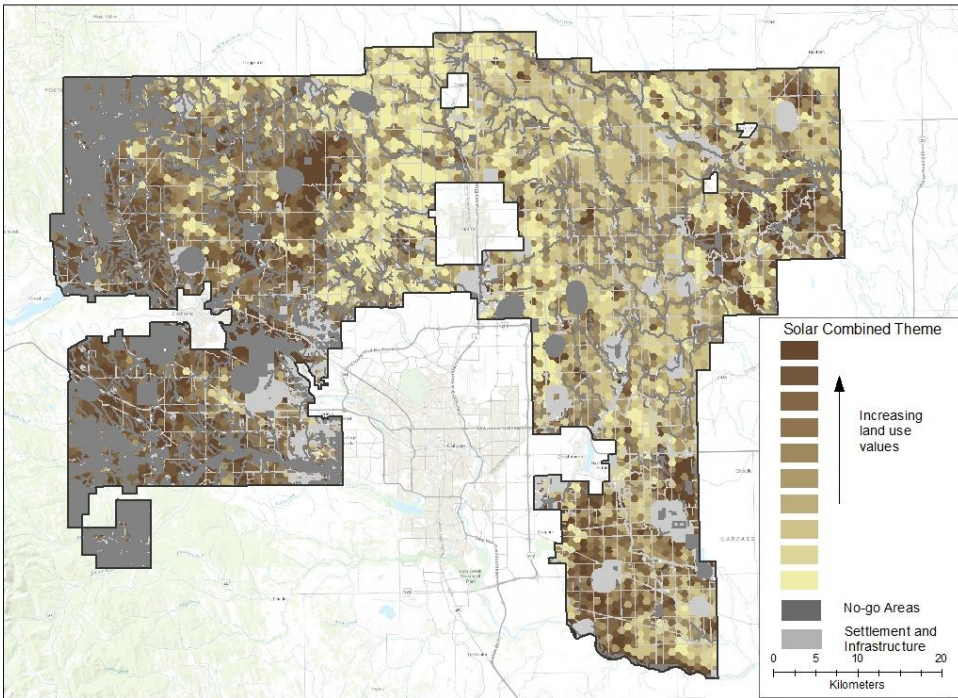


Cultural Value rating maps for wind energy development (as the orange colour darkens there is an increasing conflict with cultural value). Maps to represent the cultural value rating for solar can be found in full report.

Combining values

A combined map was developed by overlaying and summing the agricultural, ecological, and cultural value rating maps. This approach highlighted areas of mutual high value ratings and identified where renewable energy development may be less suitable.

ROCKY VIEW COUNTY COMBINED LAND USES - SOLAR

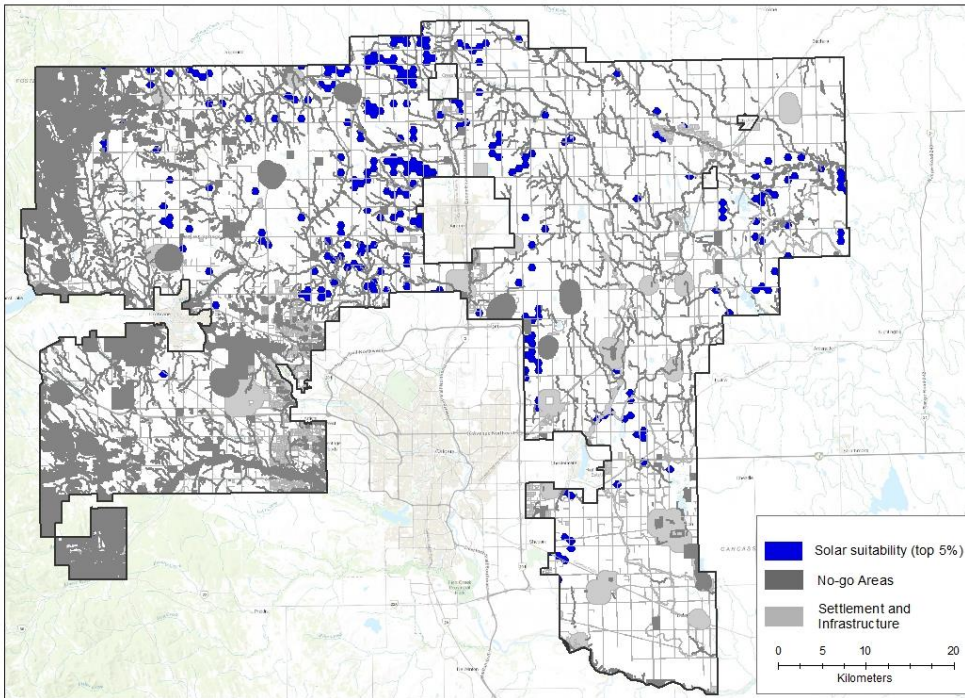


Combined value rating map for solar energy development (darker brown indicates increasing value of other land uses). Map representing the combined value rating for solar can be found in full report.

Most suitable areas for wind and solar energy development

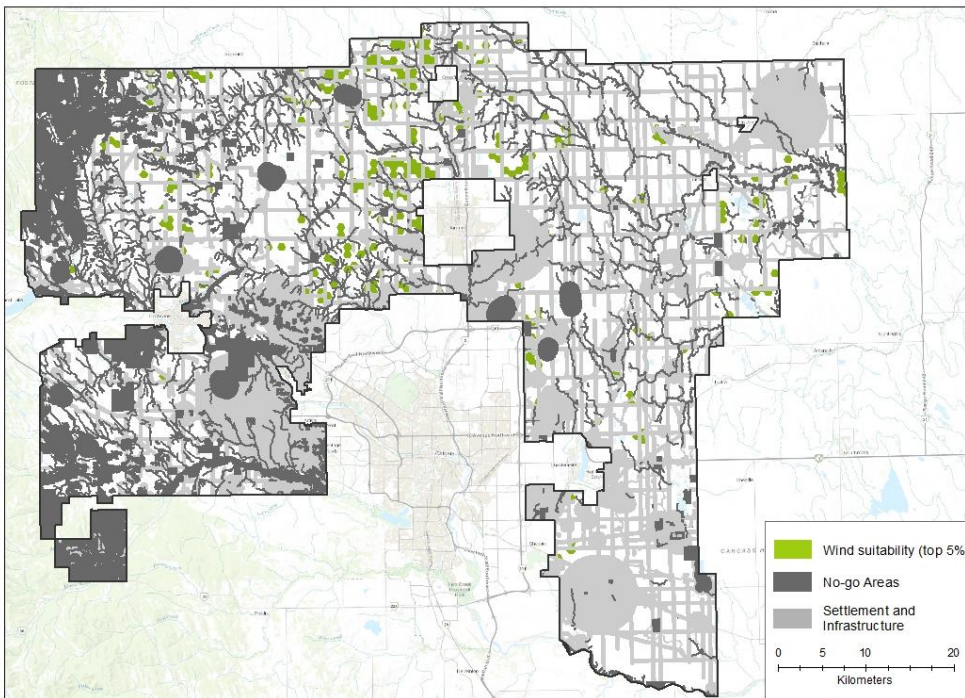
Lastly, to identify the most suitable areas for wind and solar energy development, we used the inverse of the combined value rating maps. On the maps below we highlight the lands that were identified as the most suitable (top 5%) for solar energy development (dark blue) and wind energy development (lime green). Municipal representatives can adjust these suitability levels to change the amount of land included in land considered suitable for renewable energy development to suit municipal preferences.

ROCKY VIEW COUNTY SOLAR SUITABILITY



MLUST identified 4.0% of Rocky View County, or 39,030 acres (158 km²) as most suitable areas for solar energy development (displayed as dark blue).

ROCKY VIEW COUNTY WIND SUITABILITY



MLUST identified 2.6% of Rocky View County, or 25359 acres (103 km²) as most suitable areas for wind energy development (displayed as lime green).

How to use MLUST results to develop municipal planning policy around renewable energy development

Key planning considerations

The second part of the MLUST project focused on determining how the results produced by MLUST modelling could be utilized to inform municipal planning policy specifically for solar energy development, including a Utility Scale Solar Strategy.

In developing a municipal strategy for solar development there are three key planning considerations. These include:

- size and scale of projects: in addition to utility scale projects, municipalities should broaden their focus to include a wider range of installations including micro and small-scale generation;
- planning influences: past and future planning considerations play a role in determining how solar energy fits into long-range plans for the municipality; tracking landowner opinions to gauge current and future trends regarding acceptance or rejection will aid in municipal decision making;
- land conversion rates and location; rate of conversion of land for utility scale solar should be evaluated against the rate in which land within the municipality in general is being converted to non-agricultural uses.

Integrating MLUST into municipal planning

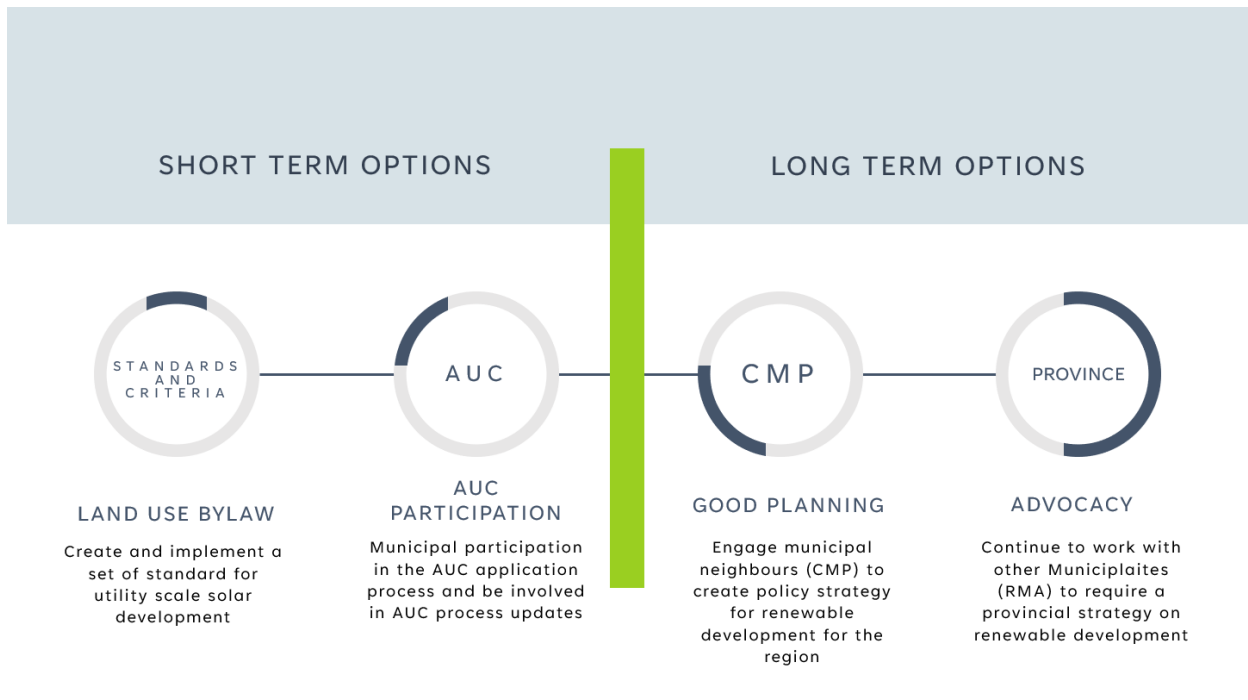
MLUST results can be used to inform planning and various scales. Currently, both regional level plans which cover Rocky View County do not contain specific policy regarding solar energy development. The work that Rocky View County has and is engaged in to understand and develop municipal policy on this front could be used to leverage the Calgary Metropolitan Region Board (CMRB) to develop a regional solar energy / renewable energy strategy.

MLUST results can also be used to inform Rocky View County's Municipal Development Plan (MDP) and relevant Land Use Bylaws (LUB). Central to the preparation of a solar strategy is the MLUST process which depicts the most suitable areas for large-scale solar development which coincided with low probable conflict with other land uses. Specific policy can be crafted for the MDP which integrates and elevates the use of the MLUST results into other planning processes and approvals.

Once embedded in the planning process, solar proponents should be made aware of the MLUST ratings for lands proposed to host their proposal. If the MLUST rating indicates that the land may be less suitable for solar development, future developers should be required to provide an explanation as to why their project should be allowed to proceed as well as what mitigation measures are proposed to address the risk and issues identified. MLUST results can inform developers who may be new to the area to better understand the municipality and its values regarding utility scale solar impacts.

Specific examples of bylaw standards of development include addressing suitability of site, application requirements, site conditions, application requirements, landowner notification, setbacks, and conditions of approval.

Recommendations



SHORT TERM

Short term actions can be undertaken to bridge the gap until a utility scale solar energy strategy can be developed by the municipality. Short term actions can include the following:

- create and implement a set of standards for utility scale development including a clear outline of the development application process;
- municipal participation in the Alberta Utilities Commission (AUC) project application process to represent the municipal perspective; the level of participation needed may vary depending on the needs of the municipality.

LONG TERM

- engage regional partners in a dialogue around utility scale solar projects, and costs and benefits to each partner; work towards a regional strategy;
- advocate for a provincial renewable energy strategy to balance impacts to land and communities with the objectives of industry.

Introduction

When municipal governments consider industrial-scale solar or wind energy development, it immediately becomes clear that not everywhere is suitable for those activities, and not everywhere is unsuitable. For some areas it is a clear-cut 'yes' or 'no', but most areas sit somewhere on a continuum between those two extremes.

The Miistakis Institute and the Oldman River Regional Services Commission (ORRSC) applied the Municipal Land Use Suitability Tool (MLUST) to assist Rocky View County in identifying where renewable energy development is most suitable in consideration of high valued agricultural, ecological and cultural lands.

Process Background

In 2018, the Miistakis Institute partnered with the County of Newell and Wheatland County, to develop the Least Conflict Lands (LCL) Decision Support Tool to inform siting for renewable energy development. The LCL process and decision support tool was modelled after the Least Conflict Lands for Solar PV development in the San Joaquin Valley of California developed by Conservation Biology Institute, UC Berkeley School of Law, and Terrell Watt Planning Consultants¹. The process was rapid (6 months) and resulted in a municipal scale, non-regulatory planning tool that could be used by municipalities facing renewable energy development interest.

In the County of Newell and Wheatland County this process aimed to identify areas for utility-scale wind and solar energy developments while avoiding important agricultural, ecological, and cultural/scenic resources at a municipal scale. The process engaged 37 stakeholders including representatives from municipal staff and council, provincial government, irrigation districts and NGOs. The process resulted in a series of spatial models that identified conflict probability for the three land use themes: agricultural, ecological, and cultural/scenic resources². In addition, industry identified suitability areas for wind and solar energy development. The resulting spatial models³ identified areas of lowest ecological, agricultural and cultural/scenic probable conflict, illustrating where wind/solar energy development would be best suited (most compatible) with existing land use values.

Upon completion of the LCL process, Miistakis partnered with ORRSC to identify adjustments to the process and expansion of the tool to other rural municipalities in Alberta. Improvements included expansion of the tool to consider other development types, clarity on function of feature within each theme, addition of a new settlement and infrastructure theme, adjustment of the engagement process to reduce time and focus on municipal council and staff, and rebranding of the LCL decision support process and tool to MLUST.

Process Constraints

Decision Support

It is important to remember that the Municipal Land Use Suitability Tool (MLUST) is a decision-*support* tool, not a decision-*making* tool. The tool shows decision makers the relative suitability of various parts of the municipality for utility-scale wind and/or solar energy development, but it is not appropriate for parcel-level decisions.

The local government's final decision has two other critical mechanisms.

First, municipal councilors must incorporate numerous other factors (economic development priorities, landowner attitudes, costs to the municipality, etc.) when they make their decision. The MLUST tool aids this by identifying which areas might be more or less appropriate for this type of development.

¹ <https://consbio.org/products/projects/san-joaquin-valley-planning>

² (https://www.rockies.ca/project_info/MIR_LCL_Report_FINAL.pdf).

³ <https://databasin.org/galleries/56f3b57fa8e74f61b884e5f8c9943102>

Second, MLUST is a planning tool, but actual decisions about a specific wind or solar installation have many other considerations. Not the least of these is the specific development and building permits that would be needed, based on site-specific analyses, assessments, and approvals. The MLUST tool should never be construed as providing this site-specific direction.

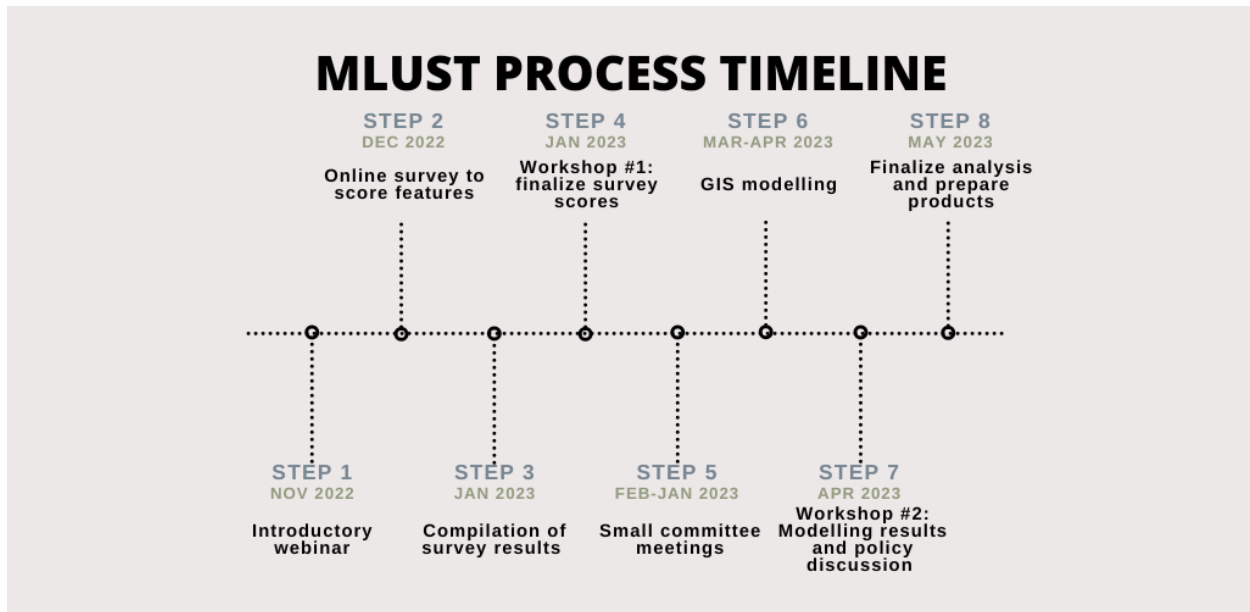


Figure 1. MLUST process timeline for Rocky View County.

Scale of Use

The ‘scale’ of the MLUST’s applicability illustrates this well. The outputs of the MLUST process can be used to support development of statutory plans at two scales:

- the Municipal Development Plan (giving high-level indications of priorities, municipality-wide maps), or
- the Area Structure Plan (supporting broad intentions for the type and general location of different types of development).

Spatial modelling

MLUST results in map products that represent low conflict areas for agriculture, ecological and cultural themes based on scoring of many different landscape features. The process is dependent on the availability and accuracy of spatial data used to represent each feature. Sometimes features cannot be easily represented spatially and are therefore not included in the modelling.

Process Overview

Miistakis Institute and ORRSC, provided, managed and facilitated the MLUST process for Rocky View County. This included providing support and guidance to Rocky View County as they move through the steps of the process. Miistakis ran the GIS modelling.

Municipal participants included all council representatives, and municipal staff members; they participated in the engagement portions of the process, including one introductory webinar, one survey per development type, two workshops and small committee meetings.

An eight-step process (Figure 1) is used to create the Municipal Land Use Suitability Tool. There are many terms used during the MLUST process – to help you navigate the language and process, terms are defined below:

Value Rating – A derived score indicating the value placed on a land use considering the estimated likelihood that the proposed development (wind or solar) will come into conflict with an identified land use.

Quantification – The process of converting the qualitative survey scores (very low, low, medium, high, very high) to quantitative scores (0-100) so that they can be incorporated into the modelling.

Land Use Theme – The three high-level categories of land use incorporated into the MLUST process and modelling: agricultural, ecological, and cultural. Each theme is broken down further into ‘Features.’

Feature – A subset of any of the three overarching land use themes, used to break each theme down into manageable, measurable land use values, and created to allow users to score different facets of a land use theme.

No-go Area – An area with a prohibition or restriction for wind and/or solar energy development due to an existing policy or regulatory constraint.

Scoring – The participant exercise of indicating if a given feature was of value (very low, low, medium, high, very high) relative to the development type, indicating an inverse likelihood of compatibility.

Buffer – During the scoring process, participants were also asked to provide recommended buffers around a feature. A buffer is a setback from that feature in which renewable energy developed would not be permitted.

Suitability Map – The ultimate product of the MLUST process, and the inverse of the value ratings maps, showing where in the municipality wind/solar energy development would be best suited (most compatible) with existing land use values.

The following outlines activities within each step (Figure 1):

Step 1: Introductory webinar:

- Overview of the tool
- Walk-through of the steps
- Theme/feature introduction

Step 2: Online survey to score features:

- Individual online “survey-style” exercise completed by municipal
- Feature scoring and buffering of appropriate features for each land use theme

Step 3: Collation of survey results:

- Completed by the Miistakis Institute
- Integrated applicable development regulations and setbacks
- Quantified scores to create a value rating for features
- Looked for areas of agreement / disagreement in survey results
- Designed in-person workshop based on survey results

Step 4: Value rating finalization workshop:

- In-person workshop with municipal participants, held at Rocky View County Municipal Office on January 17, 2023
- Discussed all areas of high variation in responses to come to consensus

Step 5: Small committee meetings:

- Virtual meetings held with the Miistakis Institute and volunteer council and staff to address some remaining areas of discrepancy in scoring or features with complicated considerations

Step 6: GIS (Geographic Information System) modelling:

- The Miistakis Institute undertook modelling exercise to convert value rating into maps

- One map for each theme showing combined value rating, and one overall suitability map, which is the inverse of the combined value probability rating map, showing where in Rocky View County wind and solar energy development would be best suited (most compatible) with existing land use values.

Step 7: Workshop #2: Modelling results and policy discussion:

- The Miistakis Institute presented the results of the modelling
- Modelling results were provided back at the scale of an MDP and the scale of an ASP
- Modelling results were provided with several thresholds (“deciles”)
- ORRSC presented policy options for Rocky View County to consider based on municipal preferences and MLUST outcome

Step 8: Finalize analysis and prepare products

- MLUST spatial analysis was rerun following some scoring changes that were requested at workshop two
- A copy of all underlying materials was kept by Rocky View County, ORRSC, and the Miistakis Institute

Modelling Overview

MLUST results in a series of map products, including value rating maps for agricultural, ecological and cultural theme areas. Together these maps are combined to create a combined value rating map. To create the suitability maps for wind and solar energy development, no-go areas and the settlement and infrastructure theme were combined and extracted from the combined value rating maps. Creating the maps required several steps to be performed in sequential order; the process is outlined in .

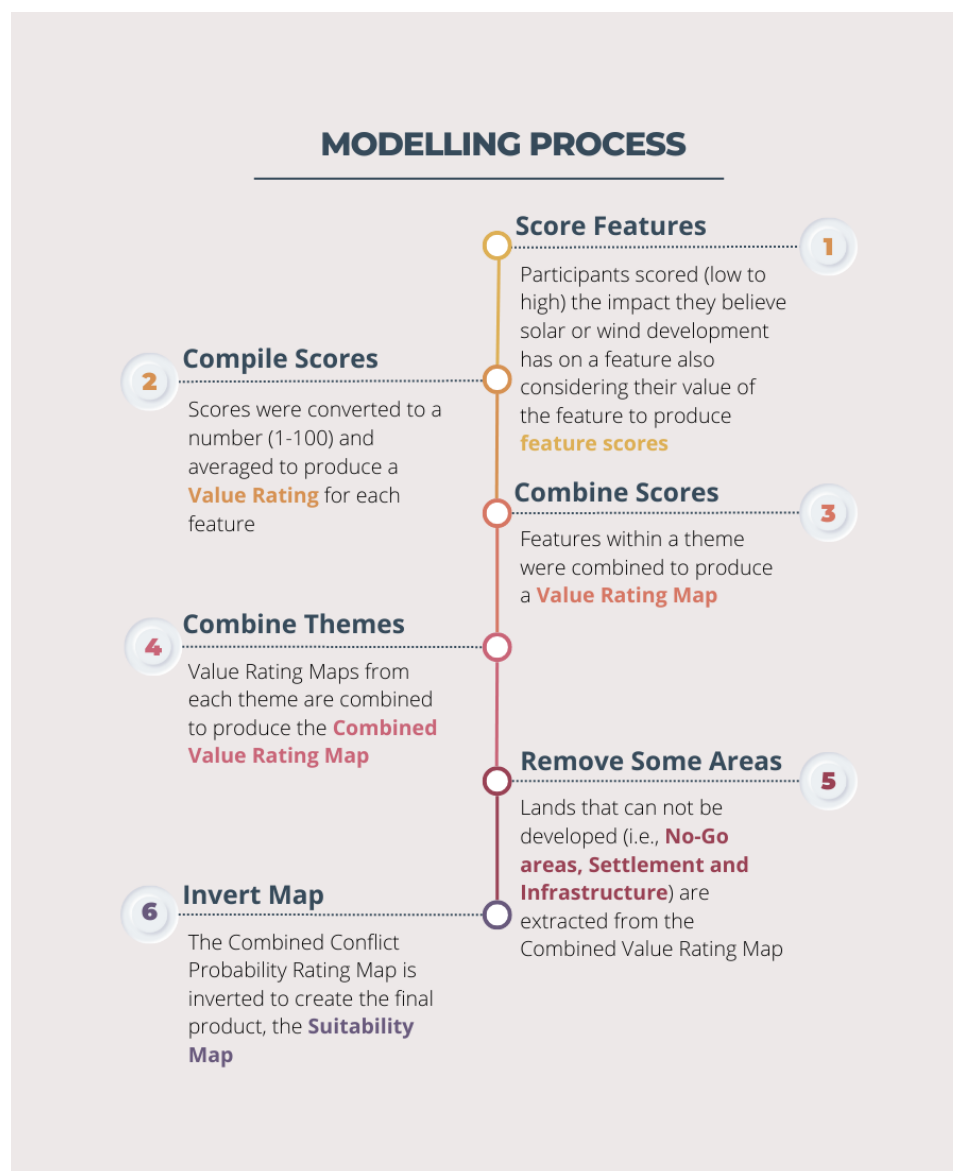


Figure 2. MLUST modelling process.

Selection of Land Use Themes and Features

Themes were selected by the Miistakis Institute to represent all the land uses that may occur within Rocky View County, which may come into conflict with renewable energy development. During the first webinar participants were provided with a list of land use themes (agricultural, ecological, cultural, and settlement and infrastructure), and specific features within those theme areas. Participants were also asked to identify any features or themes that they thought should be

considered in the process. During the webinar, participants were provided with additional information for each theme and feature (Appendix A), including:

- Examples/further explanation for each feature,
- A list of available spatial layers relevant to that feature
- Renewable energy regulatory notes (if applicable).

Feature Scoring and Buffering

Participants scored land use features within each theme through an online survey using *Survey Monkey* (<https://www.surveymonkey.com/>). Please see Appendix B for an example of the survey questions used. Similar questions were developed for the wind survey exercise.

Features were scored for perceived value to the municipality and their incompatibility to wind or solar energy development, whereby very high scores represent very high value placed on the feature and very high conflict with wind and solar development.

No-go areas based on provincial regulation, municipal policy, industrial or private organization restrictions were not scored but were included in the modelling. In addition to regulation-based no-go areas, we added forest areas to the no-go layer to reflect the municipal participants' preference to remove these areas from consideration for development.

For the settlement and infrastructure theme and cultural theme, participants were asked if a buffer should be applied to the footprint of the feature, and to select the size of the buffer (e.g., 50m, 100m, 1km).

QUANTIFICATION OF THE SCORE

Each participant provided a qualitative score for features to indicate if a given feature was of value (very low, low, medium, high, very high) relative to the development type, indicating an inverse likelihood of compatibility. The land use feature scores were quantified to a number as shown in Table 1, where 100 represent very high and the highest score, and were averaged across all responses.

Table 1. Land use feature score and numerical quantification

Land Use Feature Score	Numerical Quantification
very high	100
high	75
medium	50
low	25
very low	0
do not include	0

The numerical quantification scores were averaged among all participant responses to produce a final value rating for a given feature. If there was less agreement between participants scores (i.e., dispersion across all categories, defined as less than 5 votes within any given category, or two distinct groups of voters at opposite ends of the value range), scores were discussed at workshop 1 until consensus was reached. If consensus could not be reached, a small subcommittee of volunteer municipal participants was formed to look at the spatial data sets involved and gain a better understanding of the feature.

Value ratings at the high end indicate a higher probability of wind / solar energy development coming into conflict with that land use, while scores at the lower end would indicate a low probability of conflict.

Bar charts were used as a visual aid to present survey results at workshop 1. For example, Figure 3, shows a bar chart for native prairie in the agricultural theme, where 40% of the people scored this feature very high, 53% high and 22% medium. The red line represents the value rating (average score) that was used for this feature in the GIS modelling in the native prairie example the average score was 83.

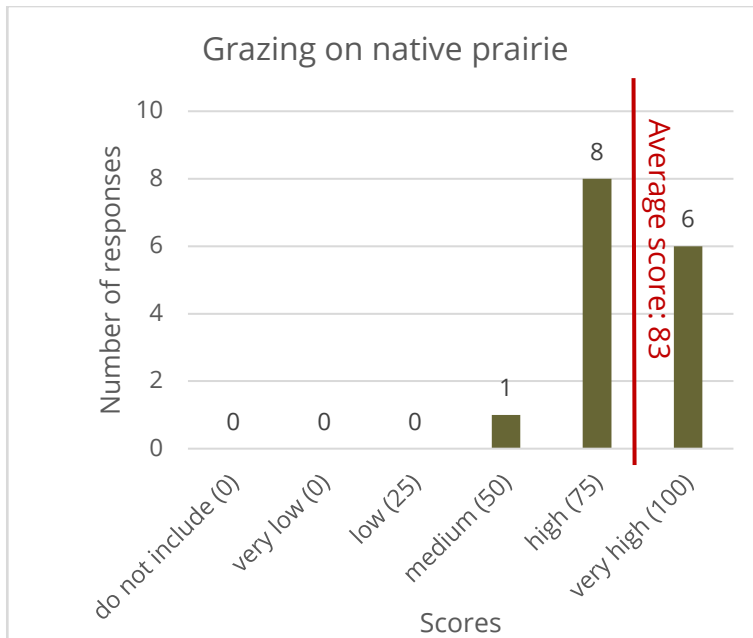


Figure 3: Native Prairie grazing value for solar (agricultural theme). The red line represents the value rating of 83 (average score).

At workshop 1, when discussing the features that had a low level of agreement, participants were asked:

- Do you all agree this value is wrong?
- Do you have a different understanding of the feature since taking the survey?
- Do you have new information since taking the survey?
- Do you want to change your answer?

Following discussion on features with lower agreement in scores workshop participants were able to change their responses but over 50% of participants needed to agree to re-open the vote for a new score. If the feature was opened for a re-vote, the main municipal participant driving the discussion was asked to provide a compelling argument as to why the score was “wrong” and suggest a change. A vote was immediately conducted using a show of hands and the new score was recorded.

CALCULATION OF BUFFERS

Buffers were selected by averaging the distances provided by participants, and then selecting the closest hundredth or thousandths place (Figure 4), or by discussion at workshop 1 in cases of large discrepancies in responses. In cases where the majority of responses indicated no buffer (0 m), no buffer was used as opposed to applying an average. This decision to use no buffer in those cases was discussed at workshop 1 and agreed upon by participants.

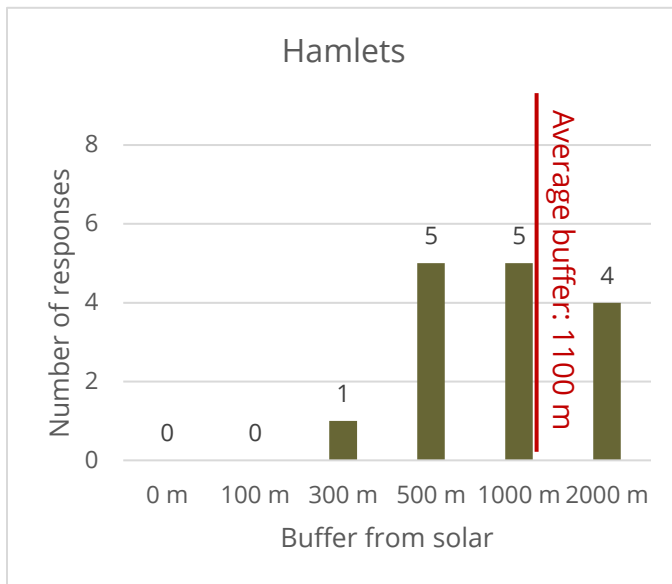


Figure 4. Buffers selected around hamlets. The red line indicates the average buffer size selected by participants.

Modelling Process

To understand where land is suitable for wind and solar energy development, areas regulated as no-go areas by provincial, municipal and organizational policies, forested areas (as deemed unsuitable for development by municipal participants) and, settlement and infrastructure footprints and associated buffers were mapped. These areas were removed from the land base as they are not suitable for renewable energy development.

For the agricultural, ecological and cultural themes each feature was *scored* by participants (low \leftrightarrow high potential for conflict), *quantified* (converted to '0 \leftrightarrow 100'), and then *averaged* (across all participants) to create a value rating for that feature relative to wind and solar energy development (Figure 5). A high value rating indicates a higher probability of wind and solar energy development coming into conflict with that particular land use, while ratings at the lower end indicate a low probability of conflict.

To map this, Rocky View County was first partitioned into equal-sized hexagons (equivalent to approximately 1 quarter section each). Each feature was applied to the hexagon grid based on area occurring in the hexagon and its assigned wind/solar value rating (Figure 5). To represent the entire theme for a given hexagon, the maximum value of that theme's underlying features was selected (taking the maximum value prevented double counting of features within the theme). Value ratings were converted into a range of 10 possible tones on a gradient, with the palest tone indicating a value rating in the lowest 10%, and the darkest tone indicating a rating in the highest 10%.

The agricultural, ecological, and cultural value rating maps were summed to create a combined value rating map for solar and wind, respectively (Figure 5). We inverted the combined value rating maps and extracted the non-development areas (based on no-go areas and settlement and infrastructure) to produce wind and solar suitability maps where darker tones represent areas where wind and solar are best suited relative to existing land use values.

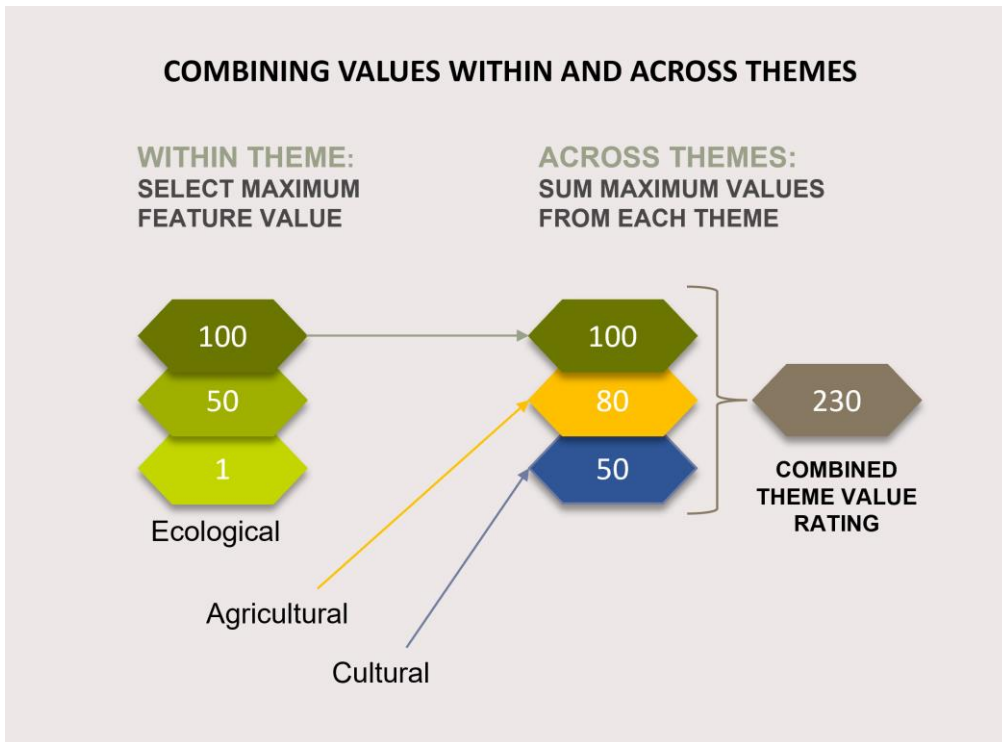


Figure 5. Illustration of how scores were combined within and across themes.

Results

Here we present results of the process to develop suitability maps for solar and wind energy development in Rocky View County.

Where Can Renewable Energy Development Go?

To understand where there is suitability for wind and solar energy development in Rocky View County, we first assessed regulations that prohibit renewable energy development, documented as no-go areas. We also removed the settlement and infrastructure theme features as these are also non-development areas due to existing development.

Wind and Solar No-go Areas

For wind and solar energy development the following no-go areas are presented in Table 2, based on regulations/policy (provincial⁴, municipal and organizational policies). Forested areas were added to the no-go category, although not tied to a specific policy, to reflect the views of municipal participants to exclude forests from potential development areas. To map these areas, we merged spatial files representing each feature to develop a no-go area map for wind and solar (Figure 6).

⁴ [Wildlife directive for Alberta wind energy projects](#)

⁵ [Wildlife directive for Alberta solar energy projects](#)

Table 2. No-go areas in Rocky View County

No-go Feature	Regulation
Provincial Protected Areas	AEP Wind/Solar Directives
Crown land	AEP Wind/Solar Directives
Municipal Environmental Reserves	Municipal Government Act
Private land conservation	Organization Policy No Wind/Solar
Piping plover waterbody and 200m buffer	AEP Wind/Solar Directives
Named Lakes and 1000m buffer	AEP Wind/Solar Directives
Large Rivers 100m, Streams 45m buffer	AEP Wind/Solar Directives
Historical Resource Value 1 and 2	Alberta Culture and Tourism
Forests	No specific regulation

ROCKY VIEW COUNTY NO-GO FEATURES FOR SOLAR AND WIND

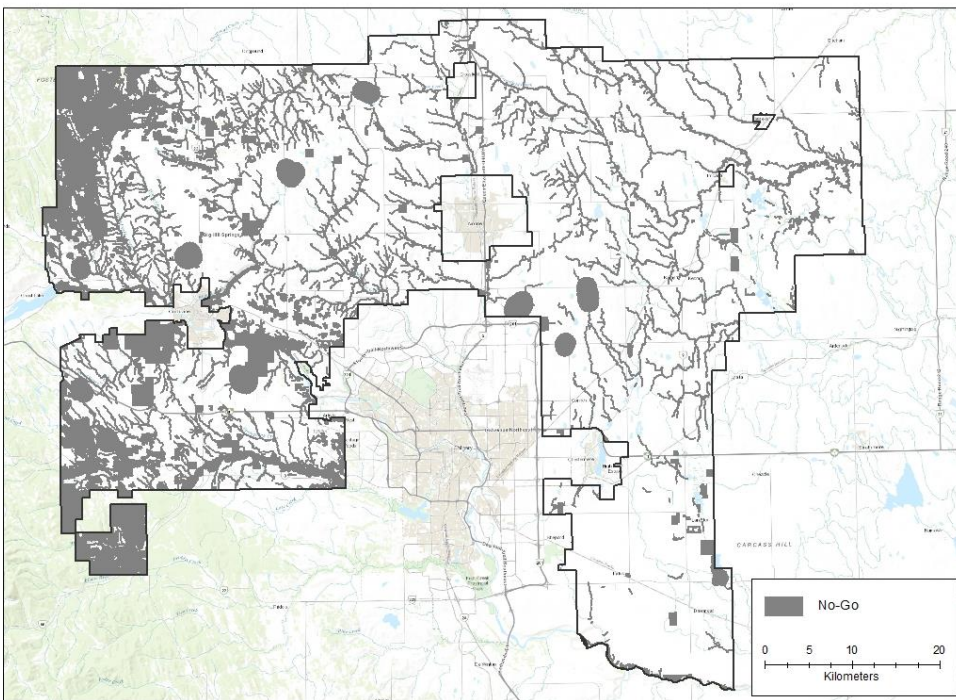


Figure 6. No-go areas in Rocky View County for solar and wind energy development based on regulations/policy (provincial, municipal, and organizational policies).

Settlement and Infrastructure Non-Development Areas

The settlement and infrastructure theme represents non-development areas within Rocky View County. Each feature was given a buffer based on either a generated average from participant surveys (Table 3, survey results in Appendix C) or bylaws. For example, for transmission lines, windmills, gravel roads, paved roads and railway lines we applied a buffer representing a typical tower height (162.5m) plus 10% (179 m) for wind. Industrial zones were not included in the settlement and infrastructure non-development areas as these zones may be suitable for renewable energy developments.

To map these features, we merged spatial files representing each feature with their appropriate buffer to develop a settlement and infrastructure theme non-development areas map for both solar (Figure 7) and wind (Figure 8).

Most of the buffers were determined by municipal participant survey responses, however, the buffer for wind development around airports and airfields was a special case. In this case, we used a buffer of 4000m, which was recommended by an aviation lawyer on the subject of aerodromes.

Table 3. Settlement and infrastructure features, and designated buffers (m)

Settlement and Infrastructure	Solar Buffer	Wind Buffer
Urbanized areas		
Residential/commercial/industrial within	900	900
Rural residential		
Grouped Country residential	0	900
Hamlets	1100	1000
Rural Commercial (Non-Agricultural)		
Commercial establishment and subdivision	0	600
Rural industrial (non-agricultural)		
Solar Farm	0	0
Wind farm (windmills)	0	0
Transmission	0	179
Oil and gas processing plant	0	0
Mineral extraction	0	0
Processing plant	0	0
Waste Transfer Site	0	0
Transportation		
Divided highway	0	179
Paved road	0	179
Gravel road	0	179
Airport	1000	4000
Airfields	1000	4000
Railway	0	179
Water management		
Reservoir	200	400
Treatment Plant	200	300
Irrigation Canals	0	0

ROCKY VIEW COUNTY SETTLEMENT AND INFRASTRUCTURE THEME - SOLAR

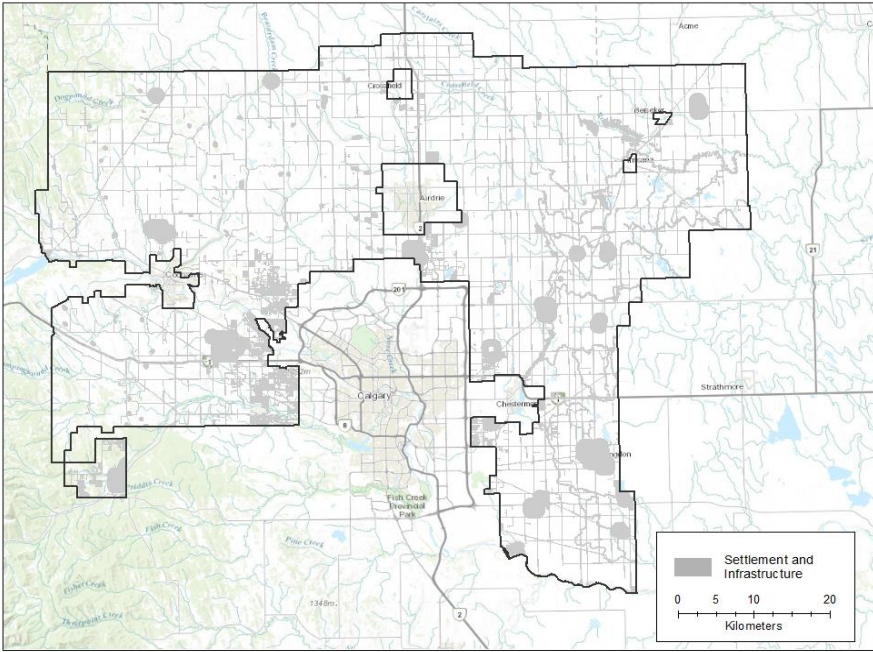


Figure 7. Settlement and infrastructure non-development areas for solar development.

ROCKY VIEW COUNTY SETTLEMENT AND INFRASTRUCTURE THEME - WIND

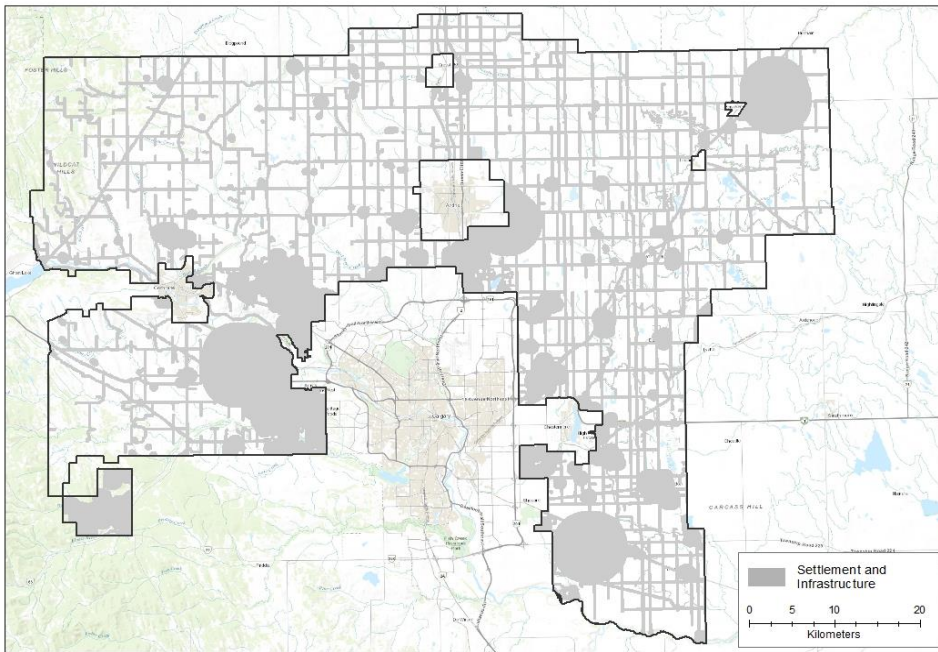


Figure 8. Settlement and infrastructure non-development areas for wind development.

Potential Areas for Renewable Energy Development

Using the no-go areas and non-development areas from settlement and infrastructure we determined that 75.5% (solar) and 46.0% (wind) of the landscape has the potential to support utility scale renewable energy development, as seen in Figure 9 and Figure 10, respectively. Although this creates a first step in understanding where renewable energy development is suitable it does not consider other land uses, such as agricultural, ecological and cultural values.

ROCKY VIEW COUNTY SOLAR POTENTIAL

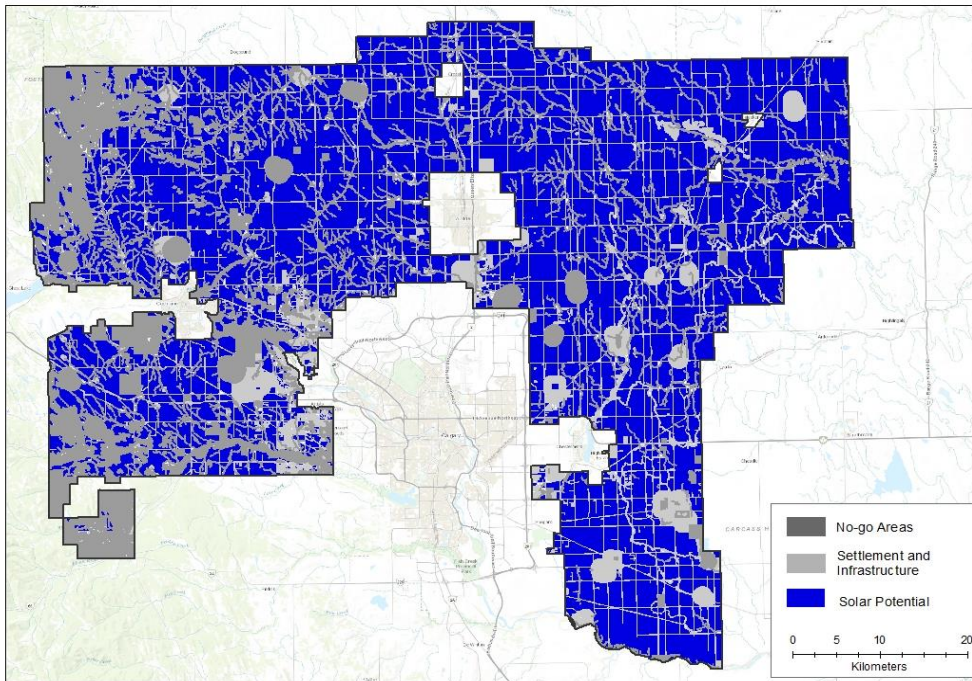


Figure 9. Potential land base for solar development once no-go areas and settlement and infrastructure non-development areas were removed.

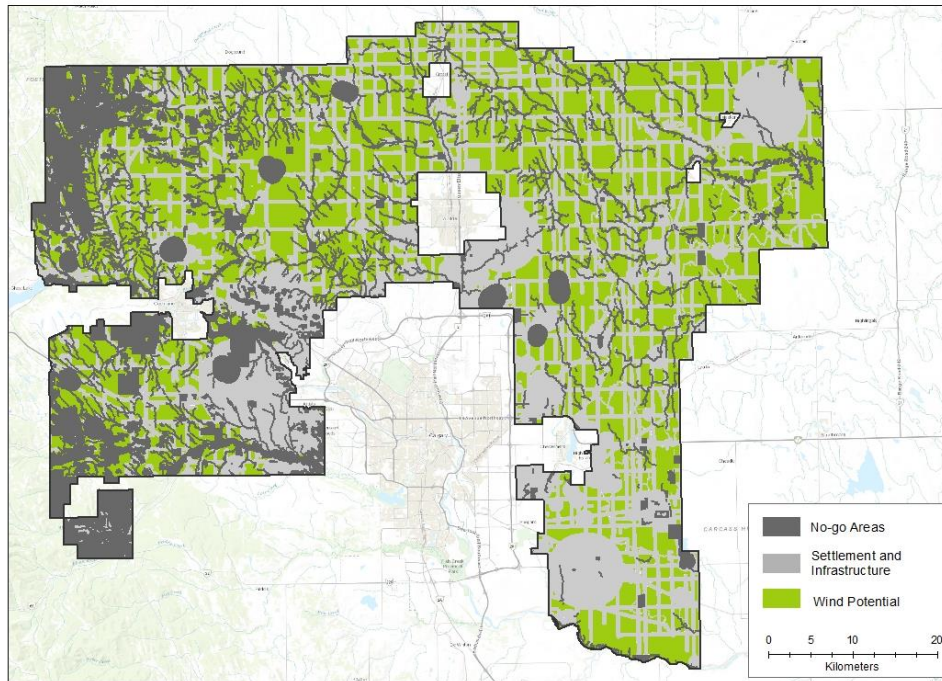


Figure 10. Potential land base for wind development once no-go areas and settlement and infrastructure non-development areas are removed.

What Other Land Uses Did We Value?

Agricultural Theme

The features within the agricultural theme are listed in Table 4, with their value ratings relative to solar and wind energy development (see survey results in Appendix C). Features included in the modelling are represented spatially in Appendix F. Figure 11 and Figure 12 illustrate the agricultural theme value rating map for wind and solar energy development respectively with no-go areas removed.

The initial survey results on cropland indicated moderate dispersion amongst the participant responses and following discussion at the workshop, a small subcommittee of volunteers was selected to look into this topic in more detail and make a scoring decision for the larger group after seeing a spatial representation of the data set and understanding the data in better detail. Upon seeing the spatial representation of the Alberta Land Suitability Rating System, the subcommittee expressed concern that the spatial layer representation did not correspond with their understanding of Rocky View County's prime cropland locations. To address this concern, we explored additional data options and convened the subcommittee for a second meeting to view the Canadian Land Inventory data layer instead. The subcommittee was satisfied with this representation and scored the classes to reflect their values. The classes were initially combined to form just 4 classes, but this was revised following concerns expressed during the second workshop. Table 4 represents the final outcome of the agricultural theme scoring that was included in the modelling.

The initial survey did not include irrigation features as we were unsure of our ability to acquire data to represent this theme. A small subcommittee was tasked with the role of reviewing the data set and scoring this feature for the entire group. At this meeting, irrigation acres were scored, and irrigation canals were added to the settlement and infrastructure layer with a buffer assigned.

Table 4. Agricultural theme features and value ratings

Agricultural Theme Features	Solar	Wind
	Value Rating	Value Rating
1. Grazing Lands		
Native prairie	83	55
Tame pasture	85	55
2. Canadian Land Inventory		
Class 1	100	80
Class 2	90	75
Class 3	85	70
Class 4	70	65
Class 5	65	45
Class 6	40	40
Class 7	0	0
3. Agricultural support		
Agri-business	50	42
Agri-community	50	50
4. Irrigation		
Irrigation acres	100	100

ROCKY VIEW COUNTY AGRICULTURE THEME - SOLAR

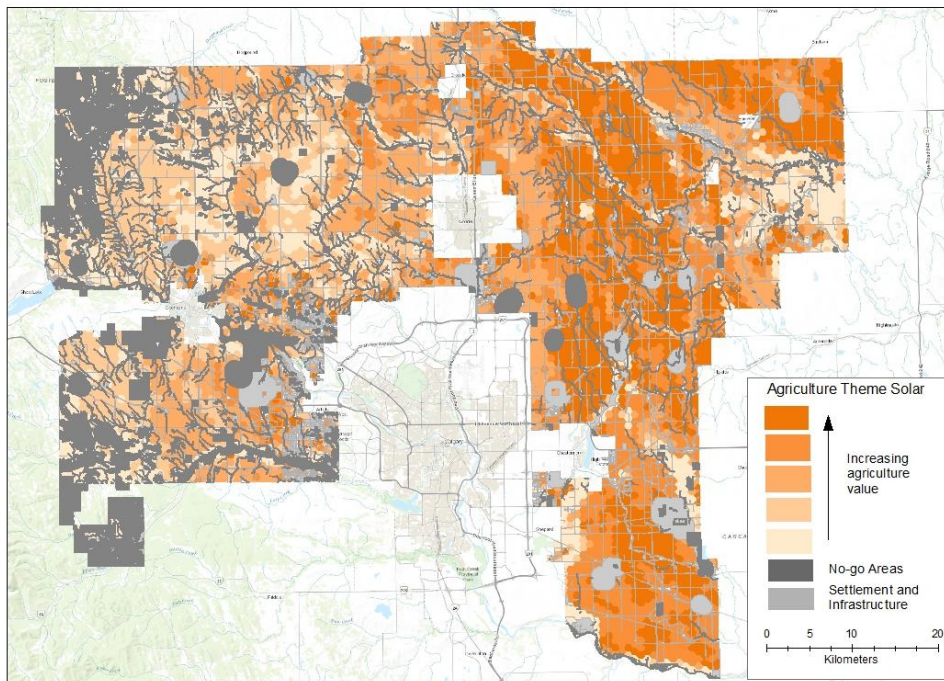


Figure 11. Value ratings for the agricultural theme for solar development.

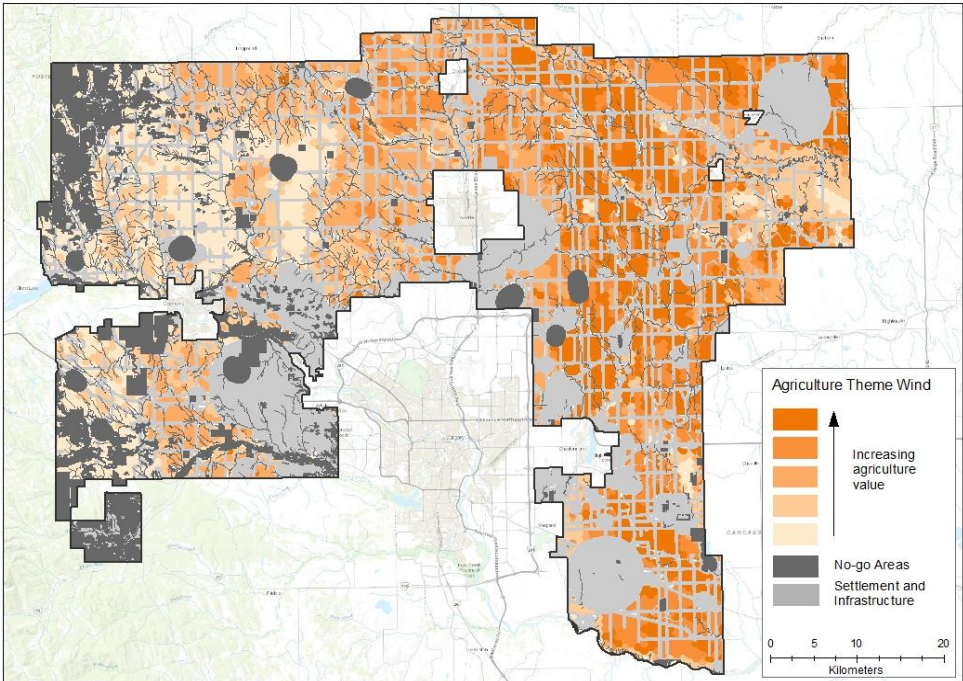


Figure 12. Value rating for the agricultural theme for wind development.

Ecological Theme

The features within the ecological theme are listed in Table 5, with their value rating relative to solar and wind energy development. Many ecological theme features represent no-go areas and were therefore not included in the ecological theme modelling. See Appendix F for visual representation of these features.

A wetland subcommittee group (consisting of a subset Rocky View County MLUST participants and the project team) reviewed the wetland data available and agreed on an approach for incorporating wetlands into the ecological theme where the density of wetlands in an area resulted in a value score where higher densities had higher values. The initial iteration of the wetland valuation resulted in five categories of wetland density, however, at workshop 2, the municipal participants expressed concern that the wetland scores had a disproportionately large impact on the overall modelling outcome. To address this concern, we divided the wetland densities into 10 quantiles and applied value scores to the top 5 quantiles only.

Figure 13 and Figure 14 highlight the ecological value rating maps in consideration of solar and wind.

Table 5. Ecological theme features and value ratings. Data gaps were not presented on the maps or included in the modelling.

Ecological Theme Features	Solar	Wind
	Value Rating	Value Rating
Wildlife Habitat		
Key wildlife and biodiversity zone	82	73
Native grasslands	100	100
Wildlife movement areas	73	68
Riparian	78	62
Waterbodies		
Un-named lake	64	38
Ground water aquifer re-charge	Data gap	Data gap
Wetlands		
Group 1: wetland area = very high	70	70
Group 2: wetland area = high	50	50
Group 3: wetland area = medium	30	30
Group 4: wetland area = low	10	10
Group 5: wetland area = very low	0	0
Groups 6-10 = extremely low	0	0

ROCKY VIEW COUNTY ECOLOGICAL THEME - SOLAR

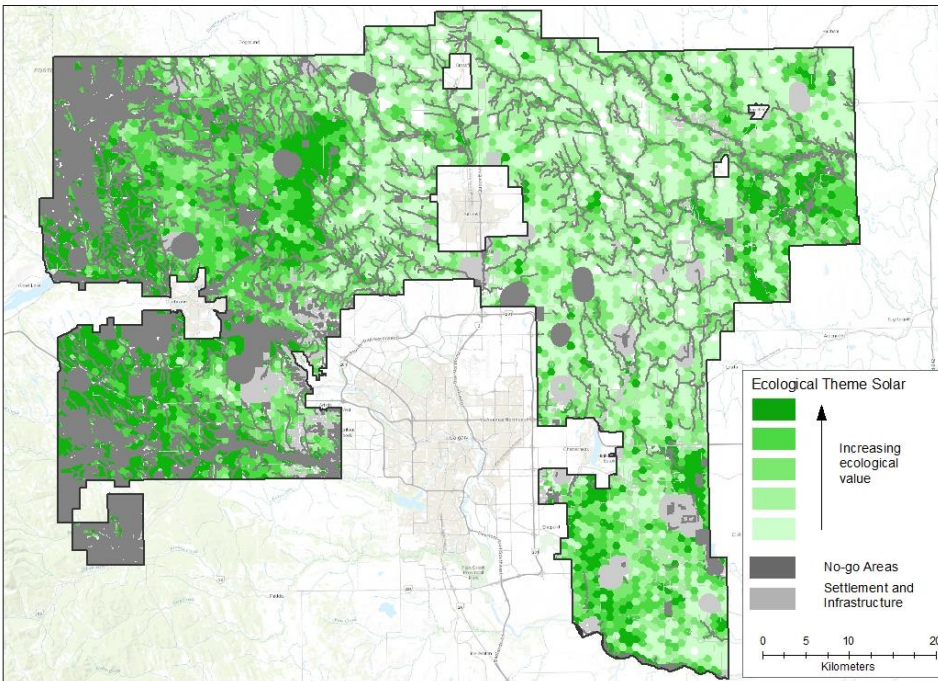


Figure 13. Value ratings for the ecological theme for solar.

ROCKY VIEW COUNTY ECOLOGICAL THEME - WIND

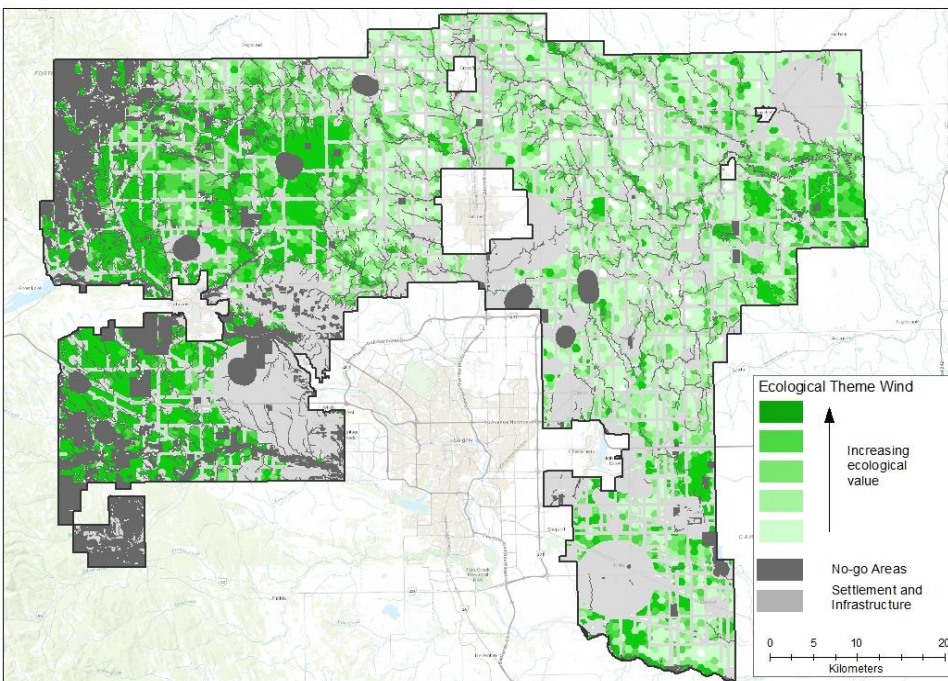


Figure 14. Value ratings for the ecological theme for wind development.

Cultural Theme

Cultural theme features and their value ratings and buffers are listed in Table 6, relative to solar and wind energy development (see appendix C for survey results). Historic Resource Value (HRV) Class 1 and 2 are included in the no-go areas and were not included in the cultural theme modelling. Features were identified by Rocky View County staff and confirmed or removed accordingly following feedback at workshop 1. Historic Resource Value Class 5 was removed from the analysis as these represent areas of possibility but where field assessment is necessary, and the large spatial footprint was found to have a disproportionate impact on modelling. highlight the cultural value rating in consideration of solar and wind, respectively. Figure 15 and Figure 16 highlight the cultural value rating maps in consideration of solar and wind.

Table 6. Value ratings and buffers (m) for cultural theme features. Data gaps were not presented on the maps or included in the modelling.

Cultural Theme Features	Solar		Wind	
	Value Rating	Buffer	Value Rating	Buffer
1. Scenic Resources				
Wearmouth (Jumpingpound) Buffalo Jump	72	1000	68	1100
Cemeteries	52	0	25	0
Historic schools	Data gap		Data gap	
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	81	1100	80	1200
Conservation sit's (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	67	1000	58	1000
Calgary Parks (Haskayne, Bearspaw)	75	900	71	1100
Provincial habitat area (Perrenoud Wildlife Habitat Area)	77	100	71	100
2. Historic Resource Value				
HRV class 3: contains a significant historic resource that will likely require avoidance	73	n/a	61	n/a
HRV class 4: contains a historic resource that may require avoidance	65	n/a	56	n/a
HRV class 5: high potential to contain a historic resource	60*	n/a	50*	n/a

*HRV class 5 was not included in the modelling

ROCKY VIEW COUNTY CULTURE THEME - SOLAR

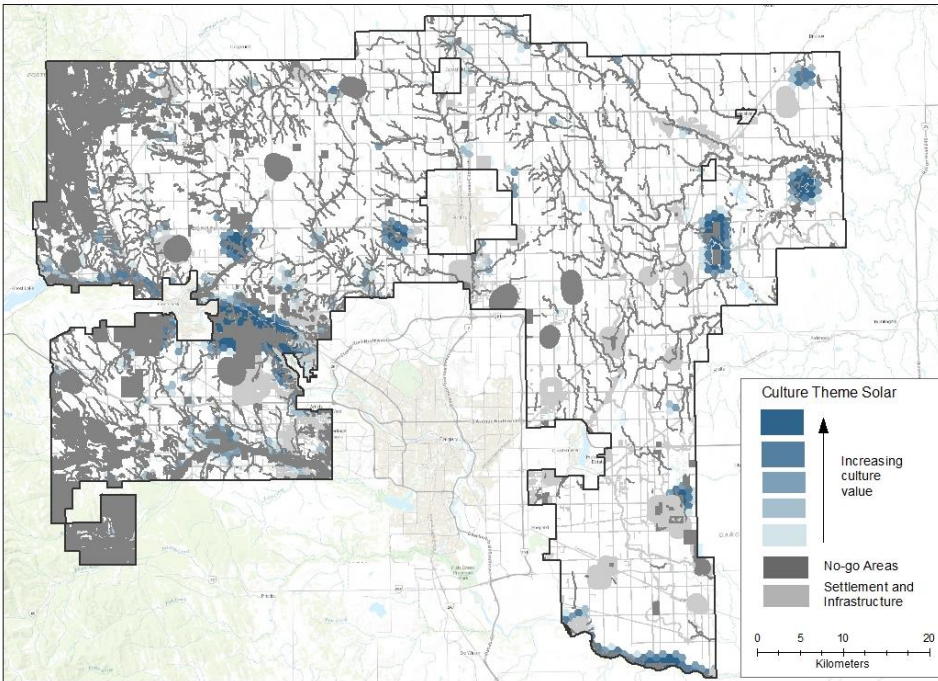


Figure 15. Value ratings for the culture theme for solar development

ROCKY VIEW COUNTY CULTURE THEME - WIND

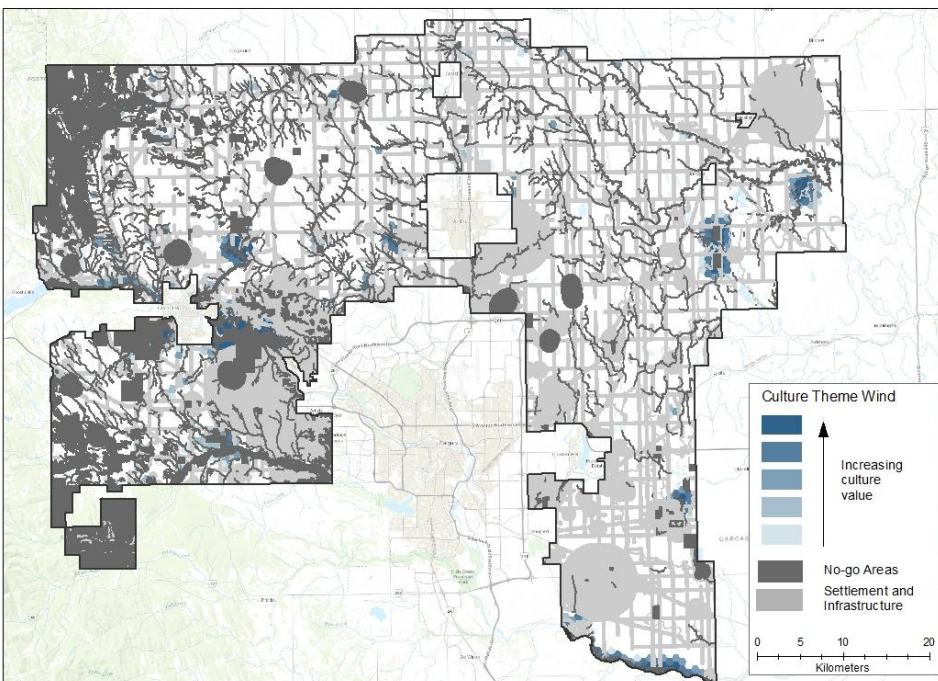


Figure 16. Value ratings for the cultural theme for wind development

Most Suitable Areas for Wind and Solar Energy Development

We summed the agricultural, ecological and cultural value ratings to produce a combined value rating map for solar and wind, independently. Values were converted into a range of 10 possible tones on a gradient, with the palest tone indicating a rating in the lowest 10%, and the darkest tone indicating the highest 10%.

ROCKY VIEW COUNTY COMBINED LAND USES - SOLAR

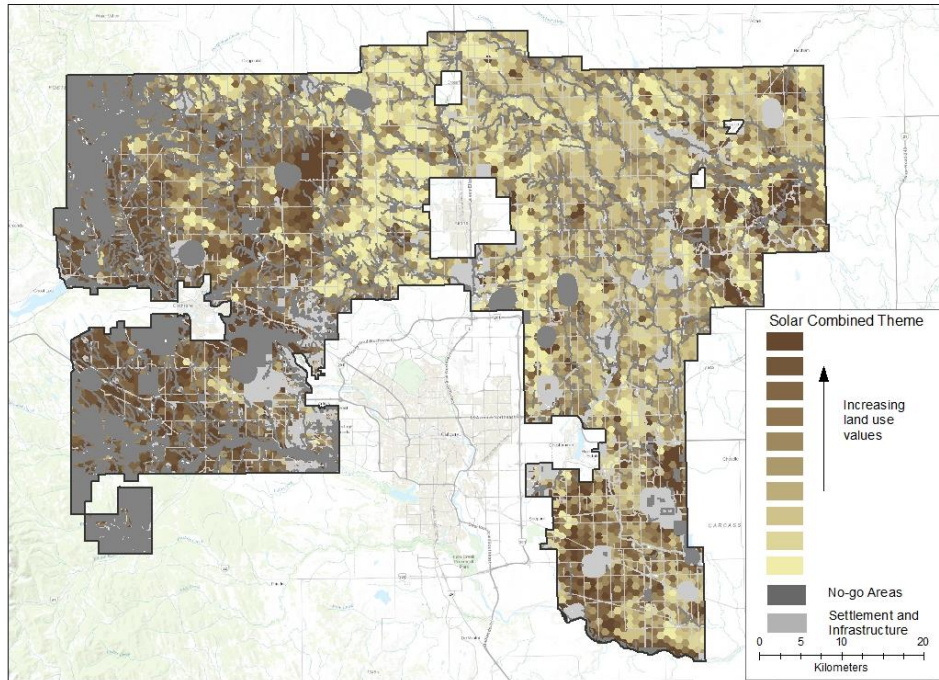


Figure 17. Combined themes value rating for solar development.

To determine the solar and wind energy development suitability areas we used the inverse of the combined value rating maps. Suitability values were converted into a range of twenty possible tones on a gradient, with the palest tone indicating a rating in the lowest 5%, and the darkest tone indicates the highest 5%.

At workshop 2, municipal participants saw, for the first time, the results of the preliminary modelling based on the value scores that were obtained through the survey or revised during workshop 1 and the small subcommittee meetings (i.e., for wetlands, agriculture and irrigation). Upon seeing the combined results, the participants were concerned about the distribution of the high suitability lands for renewable development and expressed some thoughts that the scoring of some features, in particular the features that were scored independently in small subcommittee meetings were out of step with scoring as a whole. To address these concerns the Miistakis Institute rescored the features of concern based on the feedback form municipal participants and reran the analysis. The changes to scores and the modelling results were provided back to the municipality and are presented in Appendix E.

Figure 19 and Figure 23 show the suitability areas for solar and wind energy development, respectively. The top 5% (Figure 20), top 10% (Figure 21) and top 20% (Figure 22) of suitability areas for solar energy development are shown to illustrate different thresholds that can be used to define suitable areas depending on municipal preference. Please note, however, that industry representatives have previously recommended that development is not limited based on the location of current transmission lines. The same thresholds are also illustrated for wind energy development suitability areas (Figure 24, Figure 25, Figure 26). The specific number of acres and the percentage of Rocky View County those acres represent are presented in Table 7 for solar energy development and

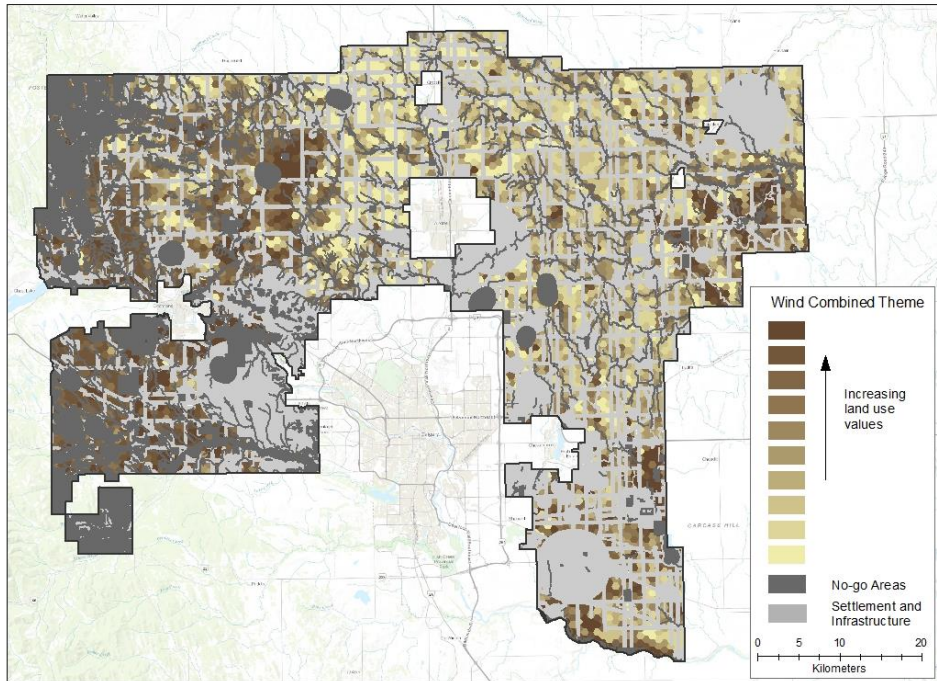


Figure 18. Combined theme value rating for wind development.

Table 7. Number of suitable acres and the percentage of Rocky View County represented for solar energy development.

Solar Suitability	Acres	Percent
Top 5%	39030	4.0
Top 10%	81245	8.4
Top 20%	160914	16.6
Total Potential	730162	75.5

ROCKY VIEW COUNTY SOLAR SUITABILITY

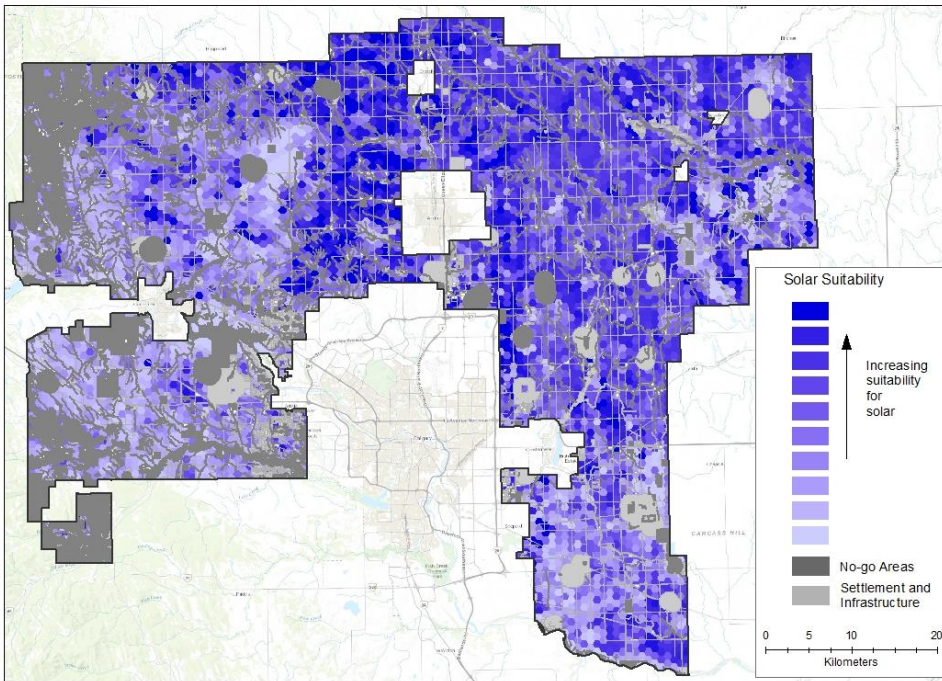


Figure 19. Solar energy suitability area.

ROCKY VIEW COUNTY SOLAR SUITABILITY

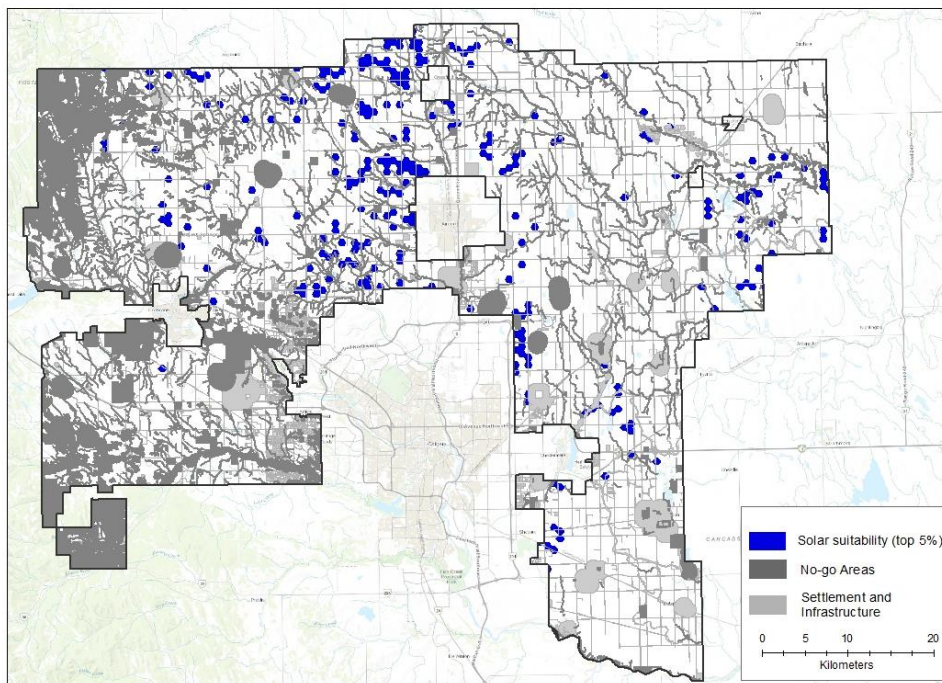


Figure 20. Top 5% of the solar energy suitability area.

ROCKY VIEW COUNTY SOLAR SUITABILITY

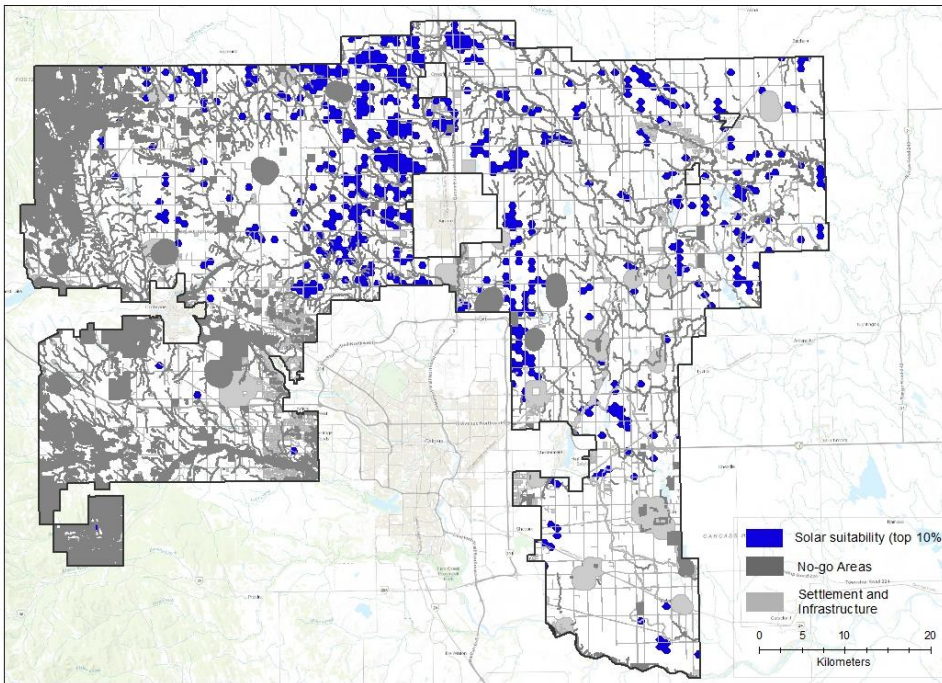


Figure 21. Top 10% of solar suitability area.

ROCKY VIEW COUNTY SOLAR SUITABILITY

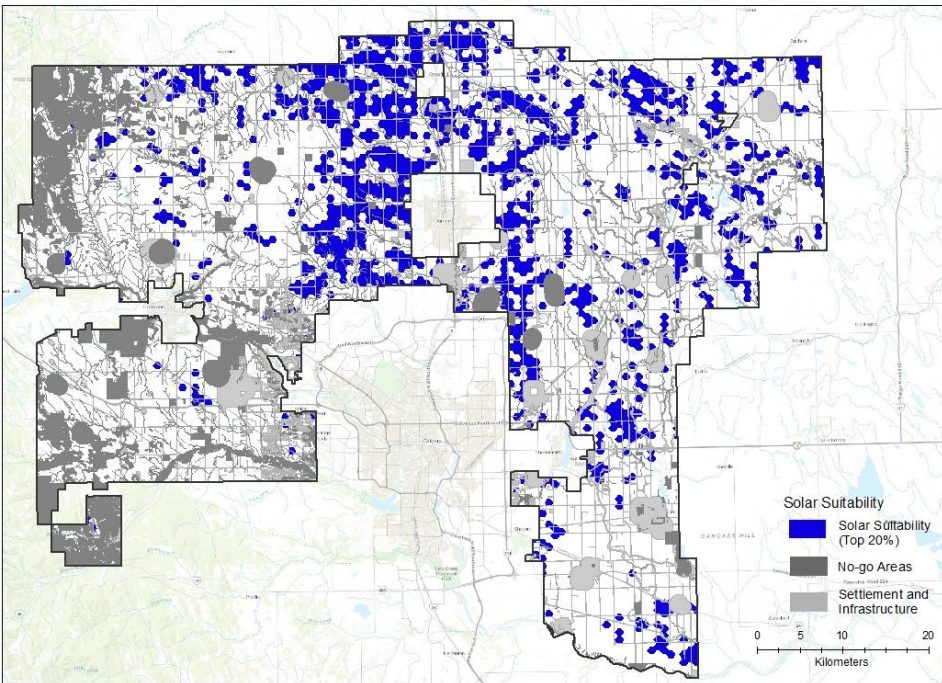


Figure 22. Top 20% of solar suitability area.

Table 8. Number of suitable acres and the percentage of Rocky View County represented for wind energy development.

Wind Suitability	Acres	Percent
Top 5%	25359	2.6
Top 10%	51118	5.3
Top 20%	100097	10.4
Total Potential	444698	46.0

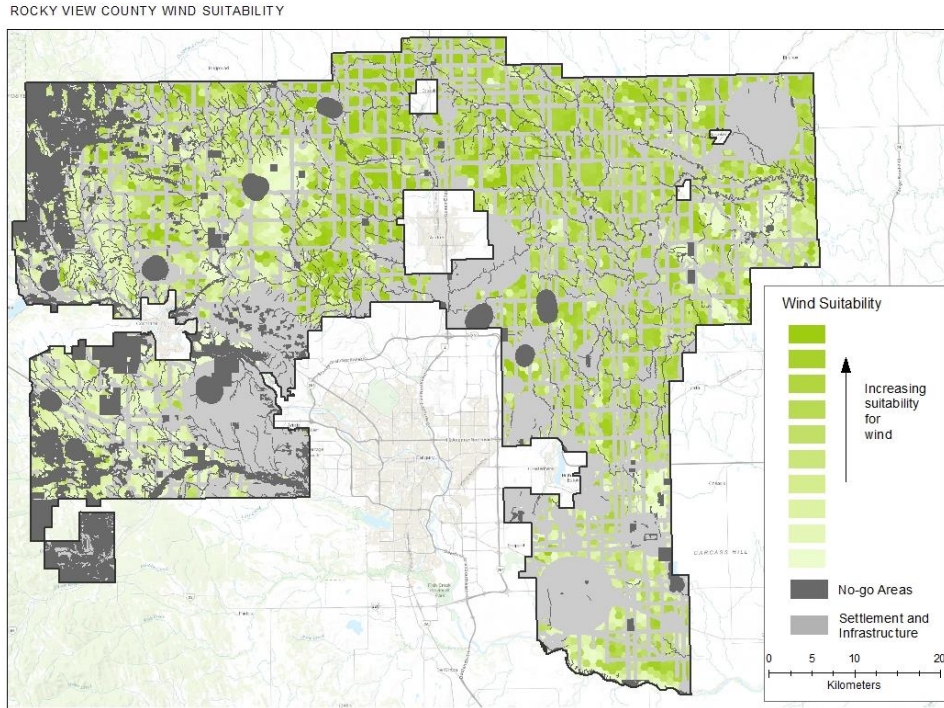


Figure 23. Wind energy suitability area.

ROCKY VIEW COUNTY WIND SUITABILITY

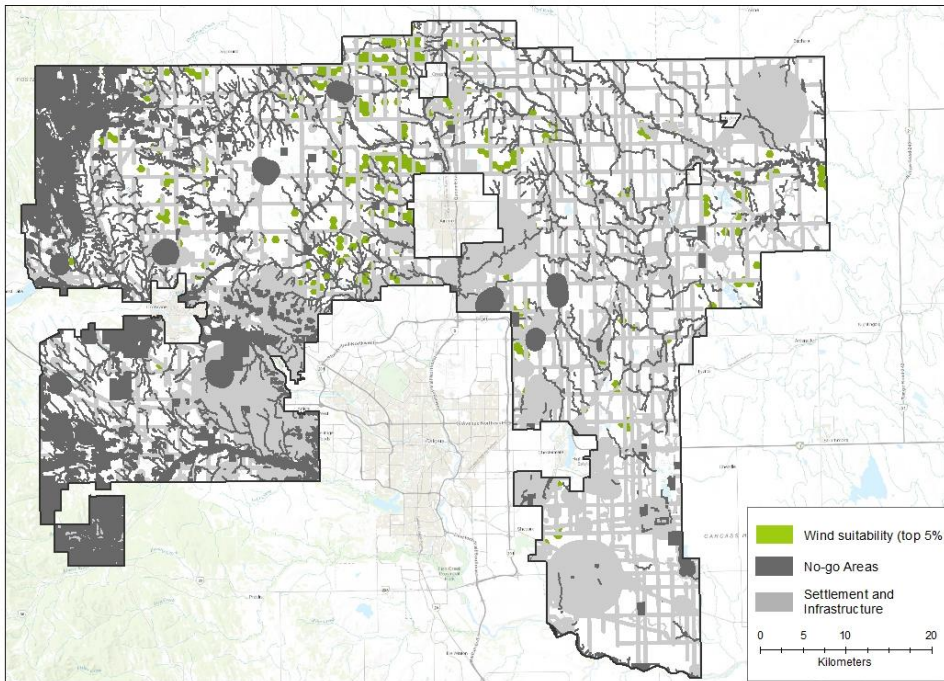


Figure 24. Top 5% of wind energy suitability area.

ROCKY VIEW COUNTY WIND SUITABILITY

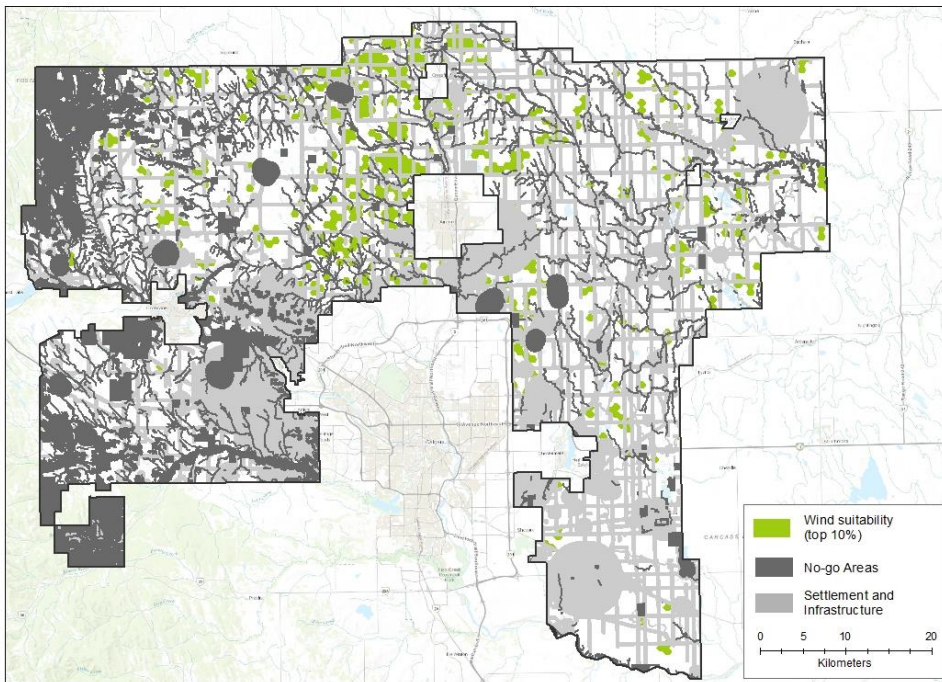


Figure 25. Top 10% of wind suitability area.

ROCKY VIEW COUNTY WIND SUITABILITY

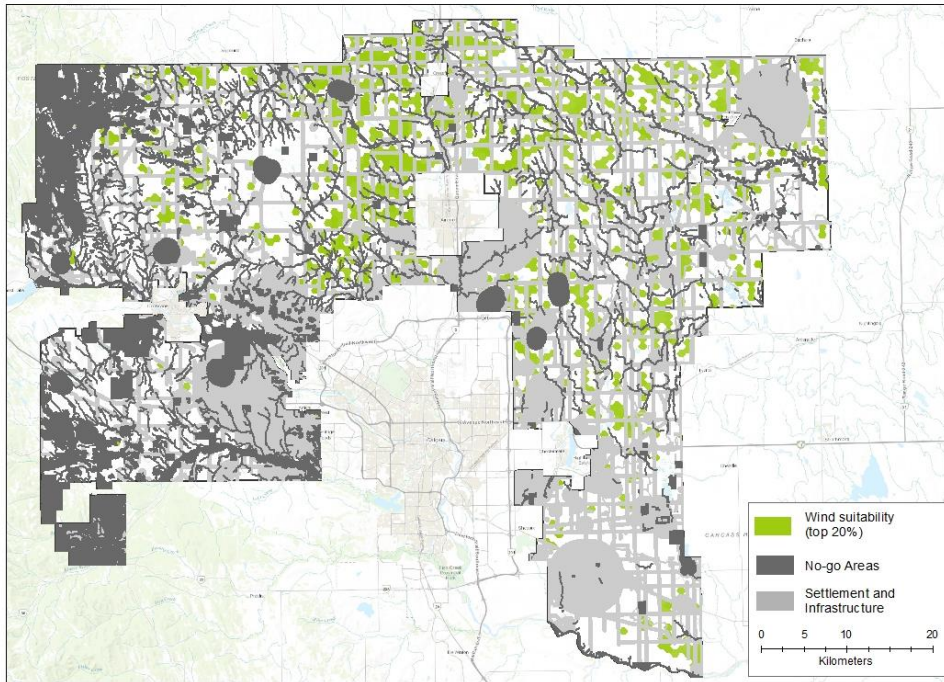


Figure 26. Top 20% of wind suitability area.

Utility Scale Solar Strategy Policy Discussion

The second part of the MLUST project focused on determining how the results produced by MLUST modelling could be utilized to inform municipal planning policy, including a Utility Scale Solar Strategy. A policy workshop was held in conjunction with the MLUST results workshop to start a dialogue with council and senior staff to begin defining options for implementing the MLUST results. The workshop also highlighted the importance of the municipal role in the approval of utility scale solar projects. Specifically, the workshop focused on the following:

- an overview of the diverse size and scale of solar energy development and key planning considerations;
- the municipal role in solar energy projects application and approvals including case studies;
- recommendations for MLUST integration into municipal planning;
- recommendations on short term and long-term options available while developing a strategy.

Types of solar energy development

The development and production of solar energy has been expanding in Alberta. These projects can range in size from a single panel to a utility-scale project encompassing hundreds of thousands of panels covering thousands of acres of land. Currently, municipalities are experiencing projects which include Micro-Generation, Small-scale Generation (which may include Community Generation), and Utility Scale Generation.

Micro-Generation solar projects are governed by the Micro-Generation Regulation (*Alta Reg 27/2008*). Typically, these energy systems do not exceed a capacity of 5 megawatts (MW) and are intended to meet all or a portion of a landowner's total annual energy for on-site consumption. The landowner normally has an opportunity to sell excess power back into the electrical grid.

Small Scale solar projects are governed by the Small-Scale Generation Regulation (*Alta Reg 194/2018*). This regulation pertains to those projects that fall in between micro-generation size and utility scale size developments. Small scale solar generation may have a community component which enables projects to be undertaken by municipalities, educational institutions, and public and community groups as long as the community would recognize benefits from the project's outputs. For projects not considered to be Community Generation, the owners of the generating unit are limited to the distribution system capacity in consultation with the distribution owner for the service area.

Utility Scale solar generation projects are those which generate more than 10 MW of power and are considered power plants. Subject to provincial approval, these energy systems are intended to generate power to be sold into the electrical market for consumption by third parties.

The focus of the MLUST process was strictly on Utility Scale Solar Projects due to the potential impacts including but not limited to conversion of agricultural land and community attitudes to the potential industrialization of land.

Municipal role in Utility Scale Solar project approvals

As the solar energy sector continues to develop, municipalities are often impacted by the development of utility scale solar projects and the accompanying transmission infrastructure. Utility scale projects in Alberta are subject to a dual approval process, one at the provincial level and one locally. Local approvals are normally in the form of a development permit issued by a municipality, whose elected council has been tasked with the role of ensuring orderly land use and development within their municipal boundary through Part 17 of the Municipal Government Act (MGA). The Alberta Utilities Commission, (AUC), a quasi-judicial independent agency established by the Government of Alberta, is tasked with the responsibility of examining a proposed project and considering whether the construction the project is in the public interest.

The AUC approval process focuses on environmental, economic, and social considerations and may include impacts to the environment, wildlife, property values, noise and visual impacts, local and municipal economic benefits and other issues raised by participants in their process. A municipality's ability to issue development permits with conditions is limited and restricted to the extent that the conditions imposed must be consistent with the AUC's approval but there may be some ability to address municipal concerns on matters not considered by the AUC through development permit conditions. MGA, Section 619 grants paramountcy to decisions of the AUC to ensure projects are not blocked at the municipal level for issues already considered and approved at the provincial level.

Municipal officials are often confronted by challenges that utility scale solar development brings to the municipal landscape. Generally, most municipalities are not opposed to the idea of solar development but struggle to balance the impacts of the development on municipal infrastructure, agricultural land, and the community. While the AUC encourages municipal involvement and input in the AUC decision-making process, municipal participation is limited unless the municipality can become designated as an intervener. To do that, the municipality must prove that it has an interest in land that may be directly and adversely affected by the proposed solar development. Municipalities in the past have only been granted intervener status when land titled to the municipality is considered to be affected, which then would allow the municipality to access funding from the AUC to support their position. When denied intervener standing, the municipality can still participate in the AUC process and hearing, but all costs associated are solely borne by the municipality.

Case Studies: Lessons learned so far

The rapid emergence of utility scale solar projects on the landscape is resulting in a similarly rapid evolution of the AUC processes and decisions. Understanding the history of AUC decisions is important for municipalities going forward to better understand how they can, with the most success, best bring local issues and concerns to the decision-making process.

During the policy workshop, two recent AUC decisions were reviewed the following points were identified for municipalities to consider moving forward:

1. Municipalities should work towards developing clear policies surrounding the development of renewables, with the goal of balancing all stakeholders' needs. This will assist the AUC in their decision making by clearly articulating the values and aspirations of municipalities regarding utility scale solar projects.
2. Municipalities need to continue to advocate for stronger provincial regulation and guidelines to ensure that municipal interests are considered in the provincial decision-making process.
3. Municipalities must be proactive in engaging renewable developers early on in the development of large projects to work to direct to them to suitable areas of the municipality where there is less conflict with the agricultural community and the environment.

Please see Appendix G for a detailed summary of each case study.

Solar strategy development: Identifying municipality position and key planning considerations

An essential first step for any municipality in determining a solar strategy is to identify their preferred position with respect to renewable energy development industry. We present three options for consideration.

- **Option 1.** Direct and focus solar development using the MLUST results: the municipality takes an active role to direct and focus solar development, which can be advanced by utilizing the results of the MLUST process. This would see development encouraged in areas identified as more suitable at a municipal level by reducing conflict with important agricultural, ecological, and cultural land. A strategy could be developed that would attempt to align municipal priorities for land use with solar development. The disadvantage of this option may be the clustering of utility scale solar projects in particular areas with potential unintentional impacts,

including impacts to the surrounding agricultural community as well as municipal infrastructure.

- **Option 2.** Promote solar development opportunities using the MLUST results: actively promote and expand development using the MLUST results to protect only the highest valued lands from a municipal perspective, by allowing increased opportunities for prospective solar development in more areas of the municipality. This would open additional areas for development which would provide more options for both landowners and solar proponents to engage in the industry. The disadvantage is the potential conflicts between traditional land uses and users and solar development.
- **Option 3.** Maintain the present circumstances: treat solar development like other potential industrial development within the municipality. As such, future solar development would locate where willing landowners agreed to host the project. The disadvantage of this option is that solar development, at the utility scale, has the potential to impact adjacent uses, neighbours and municipal infrastructure differently due to the vast size and scale of the current projects in Alberta. Without municipal input, locations of future projects may not be optimal from a municipal perspective.

Options 1 and 2 would lead to the development of a municipal solar strategy, which should involve the following key considerations:

- size and scale of projects;
- planning influences; and
- land conversion rates and location.

Size and scale of projects

The rapid emergence of utility scale solar projects on the landscape was not anticipated by rural municipalities, who have found themselves hosting the development on large tracks of agricultural land. The unexpected surge in project applications and approvals have caught many municipalities without policy or development standards in their planning documents on how to deal with the emerging industry.

Solar energy projects are likely to continue to increase in frequency as technology advances. Therefore, municipalities may need to expand the focus from a limited strategy that concentrates on utility scale solar development and broaden the focus to encompass a wider range of solar installations including micro and small-scale generation. By expanding the solar strategy's focus, a municipality can ensure that relevant policy is developed to direct and encourage growth of the industry in appropriate locations using development standards that meet community needs.

Planning influences

Council will need to determine how solar energy production fits into the current long-range plans for the municipality. Planning decisions must be evaluated against current long range planning policy as well as past decisions on development. Both past and future decisions impact the suitability of a utility scale project fit with existing uses currently on the landscape. Utility scale solar projects are almost always located on private land, and as such, municipalities in their planning decisions must balance the host landowner's right to develop their property against the desires of adjacent landowners, who may be asked to accept impacts of the development. Utility scale solar development is an emerging industry and municipalities would benefit from tracking landowner opinions to gauge current and future trends regarding the acceptance, or rejection, of the solar industry. This data gathering exercise can assist current and future Council members in setting or modifying policy to either accelerate or decelerate development.

Land conversion rates and locations

Land is a finite resource. Municipalities are tasked with directing the development of land using the principles of efficient use and the highest and best use of land as outlined in the municipality's long-range plans. Municipal Council's must make decisions regarding the conversion of land from agricultural uses to other uses, whether dwellings, businesses, or solar development. The rate of conversion of land for utility scale solar should be evaluated against the rate at which land within the municipality in general is being converted to non-agricultural uses.

The location of land conversion also plays an important role in the long-term planning of a community. Some areas within a municipality may be suitable for not only solar development, but a multitude of other uses as well. When that occurs, the municipality will need to determine through policy which land use is the most appropriate, given existing circumstances. That may be at odds with the wishes of solar energy developers, but municipalities need to balance the wishes and desires of all uses and users.

MLUST integration into municipal planning

Municipal input can provide valuable insight into the potential environmental and economic impacts of proposed utility projects and help to identify potential risks and mitigation strategies. Therefore, it is key that municipalities address utility scale solar development through policy and regulation at the local level in their planning documents.

MLUST in the regional context

Currently, Rocky View County has regional level planning policy through both the South Saskatchewan Regional Plan (SSRP) and through participation in the Calgary Metropolitan Region Board (CMRB). The CMRB's approved Growth Plan (2022) is a strategy for sustainable growth for the Calgary Metropolitan Region which encourages partner municipalities to collaborate and make coordinated decisions about servicing, mobility options and stewardship of shared water and other environmental resources.

Currently, the Growth Plan is silent on renewable energy and there may be opportunity in the future to leverage the CMRB to develop a regional solar energy / renewable energy strategy that could benefit all partners. This strategy could see the development of policy concerning the preservation of agricultural land, reduced fragmentation, and premature conversion of land within the CMRB Growth Plan area. The MLUST results for Rocky View County could act as a catalyst to stimulate discussion regarding the future of the industry locally.

MLUST in the Municipal Development Plan

The Municipal Development Plan (MDP) is a municipality's most important statutory plan as it establishes the overall policy direction regarding future development within the municipality and provides policy guidance to other planning documents, namely area structure plans, area redevelopment plans, and the land use bylaw (LUB) and when a solar strategy is prepared, the policy and direction regarding solar development should be integrated into the MDP. Central to the preparation of a solar strategy is the MLUST process which depicts the most suitable areas for large-scale solar development which coincided with low probable conflict with other land uses. Specific policy can be crafted for the MDP which integrates and elevates the use of the MLUST results into other planning processes and approvals.

Once embedded in the planning process, solar proponents should be made aware of the MLUST ratings for lands proposed to host their proposal. If the MLUST rating indicates that the land may be less suitable for solar development, future developers should be required to provide an explanation as to why their project should be allowed to proceed as well as what mitigation measures are proposed to address the risk and issues identified. The policy drafted by the municipality to incorporate the MLUST process should be flexible to capture that MLUST results are not site-specific to individual parcel. This includes identifiable differences which can occur on-site that cannot be captured completely by the MLUST process. Nonetheless, MLUST results can inform developers who may be new to the area to better understand the municipality and its values regarding utility scale solar impacts.

MLUST in the land use bylaw

A municipality's land use bylaw is the implementation document prepared and approved by Council which articulates a process for making decisions and issuing permits. Development permits issued by a municipality are normally what is required for utility scale approvals and must comply with approved standards of development. Due to the dual approval process of utility scale solar, municipalities are limited in jurisdiction to deal with specific land use issues not included in the AUC approval.

Many municipalities have developed a set of standards⁶ that local permit applications are reviewed against and a set of standard conditions which may be placed upon the municipal approval to ensure that local impacts are addressed and potentially mitigated.

SUITABILITY OF SITE

While difficult to enforce, many municipalities may wish to place a set of criteria which outlines preferable sites or locations for solar development:

- (a) *lands identified as suitable in the Municipal Land Use Suitability Tool (MLUST) for the municipality which have been identified as areas in which development is supported. Lands identified as unsuitable may be considered if the Development Authority determines special or unique circumstances may warrant its inclusion.*
- (b) *use of the poor quality lowest productive land and dry corners is preferred;*
- (c) *use of cut-off, fragmented, irregular shaped parcels is preferred;*
- (d) *to the extent possible, use of irrigated agricultural land should be avoided/minimized; and*
- (e) *the use of an unsubdivided quarter section of high-quality agricultural land that has or could contain irrigation system infrastructure shall not be considered as suitable unless the Development Authority determines special or unique circumstances may warrant its inclusion. Consideration of the proximity to electrical sub-stations and feeder distribution infrastructure in relation to the location of the development may be considered as part of the special circumstances present.*

APPLICATION REQUIREMENTS

Due to the size and complexity of projects it may be necessary to develop a set of application criteria that would address the information needed to adequately review the proposal, which may be more extensive than for other types of permit applications. This could include the following:

- (a) *a site suitability analysis including but not limited to, topography; soils characteristics; storm water collection; accessibility to a road; availability of water supply, sewage disposal system and solid waste disposal if applicable; compatibility with surrounding land uses; potential impacts to agricultural land and operations; Municipal MLUST assessment; potential visual impacts, and consistency with the policies of the Land Use Bylaw and Municipal Development Plan;*
- (b) *a detailed site plan including all setbacks from property lines and the proximity to structures or uses on the site and adjacent parcels of land; and to structures and uses on the site from residential dwellings within 300 m (985 ft.) of the property line of the proposed development;*
- (c) *detailed information about the system type, number of structures, height of structures, and the energy process and rated output;*
- (d) *any information regarding general public safety and security measures;*
- (e) *preliminary grading/drainage plan;*
- (f) *detailed information regarding construction traffic management plan including proposed material haul route, estimated employee vehicle trips (types and duration), parking / staging areas, and any potential impacts to public roads;*
- (g) *the location of overhead utilities on or abutting the subject parcel and identification of any sensitive, environmental, or topographical features which may be present on the parcel;*
- (h) *post-construction decommissioning and reclamation plan as required by the Conservation and Reclamation Directive for Renewable Energy Operations (Alberta Environment (2018/09/14));*
- (i) *a vegetation and weed management plan that addresses both the construction period and the projected lifespan of the project;*
- (j) *a soils erosion management plan with the plan to address:*

⁶ These standards have been developed by ORRSC and implemented by various municipalities in southern Alberta.

- (i) on any proposal to strip and stockpile topsoil during the construction/erection period and the rationale or need for doing so, and
- (ii) the details on proposed soil management practices and erosion control due to both wind and water; for the period of both construction and post-construction;
- (k) an Environmental Assessment Review prepared by a qualified professional or other studies and reports to demonstrate site suitability and impact mitigation;
- (l) a Fire and Emergency Response plan prepared by a qualified professional and approved by the municipality; and
- (m) a Landowner and Neighbour Emergency Response Plan prepared by a qualified professional which addresses safety, education, and response plans of directly affected landowners.

NOTIFICATION

The administrative section of the Land Use Bylaw is required to set out a process for notification of development permit applications and approvals. A municipality may wish to review their current process and determine if any additional notification would need to be considered and undertaken either prior or after the permit has been decided upon. Any of the proposed measurable standards can be adjusted to suit a particular municipality and their philosophy regarding consultation. This could include the following:

- (a) notify landowners and residents, by mail, within 3.2 km (2 miles) of the proposed development site (more or less, at the discretion of the Development Authority);
- (b) notify adjacent municipalities in accordance with the applicable Intermunicipal Development Plan;
- (c) refer the application to all relevant agencies and government departments; and
- (d) may require the developer to hold a public information meeting and provide a summary of the meeting.

SETBACKS

From a land use and planning perspective, there are five main reasons why specific setbacks may be implemented by a municipality which sets development back a specific distance from property lines. These reasons include:

1. **Function:** Setbacks are placed to ensure there is space to “pass” without having to “trespass” on adjacent property to maneuver around development.
2. **Safety:** Setbacks help ensure unobstructed access around a development.
3. **Drainage:** Setbacks are required to create an unobstructed land area to accommodate surface drainage and to ensure runoff from roof does not drain onto neighbors’ property.
4. **Maintenance and Access:** Setbacks allow landowner access around the development for maintenance purposes and not be forced to trespass onto neighboring property in order to physically be able to do perform maintenance.
5. **Aesthetics:** Setbacks may be required to accommodate landscaping, screening or the construction of a berm to block or shield adjacent landowners or uses from the industrial look of solar projects.

The following are suggested criteria regarding setbacks that municipalities can implement through the regulation placed in the Land Use Bylaw.

- (a) A Solar Energy System, Utility Scale shall be setback:
 - (i) not less than 30.5 m (100 ft) from all property lines not fronting on or adjacent to a municipal roadway; and
 - (ii) not less than 45.7 m (150 ft) from all property lines fronting on or adjacent to a municipal roadway; and

- (iii) not less than 152.4 m (500 ft) from a dwelling unit within or adjacent to the solar farm project footprint boundary measured from the wall of the dwelling.*
- (b) Any setback can be increased from the minimum setback requirements in the district depending upon the number of panels in a group, the prominence of the location, in order to reduce the impact to a residence, building, public roadway or highway, or adjacent land use.*
- (c) In balancing existing land uses and the development of Solar Energy System, Utility Scale, the Development Authority may require developers to minimize impacts:*
 - (i) within 1.6 km (1.0 miles) of a Provincially controlled highway;*
 - (ii) within 3.2 km (2.0 miles) of the boundary of a Municipally, Provincially or Federally designated parks;*
 - (iii) within 2 km (1.2 miles) of land designated Multi-Lot Residential or a designated Hamlet or Urban municipal boundary.*

CONDITIONS OF APPROVAL

A municipality can include a list of conditions which a development authority could place on an approval to ensure development standards are met, as well as conditions which may address or mitigate concerns raised in the application approval process. Suggested conditions can include the following, but it should be noted that any of the proposed measurable standards (distances, dollar values) can be adjusted to suit a particular municipality and their philosophy regarding development:

- (a) The Development Authority may impose as a condition any reasonable measures to ensure suitability, compatibility and to mitigate potential impacts.*
- (b) The Development Authority may impose as a condition that the operator and/or landowner of an industrial scale solar energy installation submit a copy of an approved conservation and reclamation plan to the municipality and the municipality shall impose as a condition upon review of the plan:*
 - (i) that a pre-disturbance site assessment be filed with municipality prior to the commencement of construction of the project; and*
 - (ii) that any interim monitoring site assessments as required by the approved conservation and reclamation plan be submitted to the municipality throughout the life span of the development; and*
 - (iii) that the approved conservation and reclamation plan is the sole responsibility of the operator and/or landowner to ensure that the lands used for the industrial activities associated with renewable energy activities are conserved and reclaimed in an environmentally sound and timely manner;*

and may require

- (iv) that a reclamation security be posted and held for the life span of the development in a form and amount to be determined appropriate by the Development Authority to ensure that the lands used for the industrial activities associated with renewable energy activities are conserved and reclaimed in an environmentally sound and timely manner.*
- (d) The Development Authority may impose as a condition that the operator and/or landowner of an utility scale solar energy installation submit a copy of a vegetation and weed management plan provided to the satisfaction of the municipality, to be reviewed and approved by the Agricultural Fieldman and the municipality shall impose as a conditions upon review of the plan:*
 - (i) the operator and/or landowner shall be responsible for controlling invasive plant threats and weeds in accordance with the Alberta Weed Control Act;*
 - (ii) the minimum clearance of solar collectors from grade shall be adequate to facilitate and maintain growth of perennial vegetation to prevent soil erosion;*
 - (iii) the operator and/or landowner shall be responsible for preventing soil loss or deterioration from taking place in accordance with the Alberta Soil Conservation Act. Soil erosion must be managed, and*

a soils management plan must be provided to the satisfaction of the municipality with details on proposed control of erosion caused by both wind and water;

- (iv) surface drainage and erosion control must also adequately address and account for impacts associated with the impervious nature of the collectors;
- (v) screening and/or increased setbacks should be considered in the site design to minimize visual impacts of the proposed development;
- (vi) spacing between solar collectors must provide adequate access for firefighting of both vegetation and electrical fires;
- (vii) a security deposit shall be posted during the construction period in a form and amount, no less than \$50,000 per quarter section of development to a maximum amount to be determined appropriate by the Development Authority based on specific site conditions to ensure that soil erosion management and weed control is adequately provided in accordance with the municipally approved vegetation and weed management plan and soils management plan.
 - (A) Upon notification by the developer, operator, and/or landowner to the municipality that the completion of construction has occurred and a request for return of the financial deposit has been made, the municipality will conduct a site inspection of the lands to verify the establishment of a suitable ground cover that will prevent further erosion of the lands subject to the development
 - (B) The funds will be released with no interest paid upon confirmation that the soil erosion management and weed conditions have been completed to the satisfaction of the municipality and there are no unresolved soil or erosion issues, mitigation orders, remedial measure orders, notices or violations that are outstanding or unresolved.

Solar Energy Strategy Recommendations

There are several options that may be undertaken by the municipality, in both the short and long term, that could bridge the gap until a utility scale solar energy strategy is completed by the municipality.

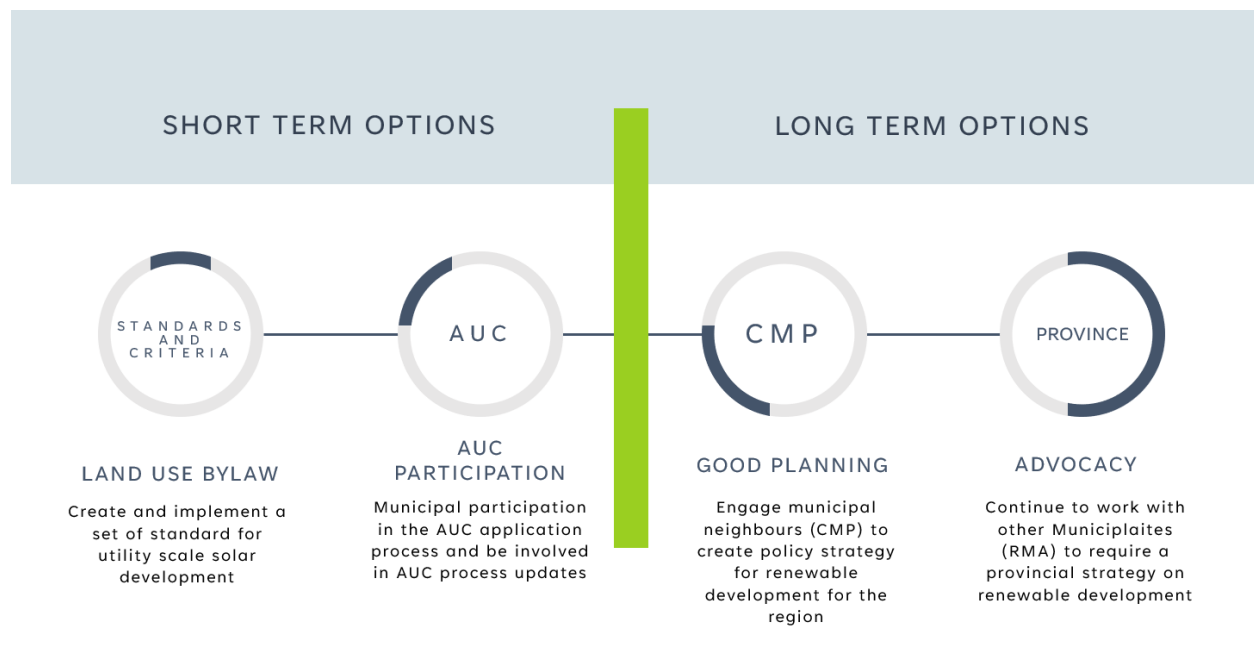


Figure 27. Illustration of short term and long term options for municipality actions regarding renewable development.

Short Term

In the short term, the municipality can create and implement a set of standards and criteria as outlined in the previous section to guide development. By clearly outlining a development permit application process, the municipality can set expectations. That will ensure that the project proponent, municipal administration, and the public are aware of the type of information necessary to review and evaluate solar projects at the local level.

The second action in the short term is for municipalities to participate in the AUC project application process so that the municipal perspective is represented for consideration in the provincial approval process. While there is no clear sequence for proponents to obtain their dual approvals, in recent months many solar developers have decided to obtain the provincial approval first, leaving the municipal government in a position of having to raise local concerns and issues during the AUC process instead of through a local permitting process. As the provincial approval and conditions have paramountcy over a municipal permit, once the AUC approval is issued the local permit must be in alignment. Finally, the AUC from time to time updates their rules involving applications and municipalities should take all opportunities to engage in the consultation process which can bring to light local concerns with the current approval process.

Long Term

In the longer term, the municipality can work towards engaging its regional partners in the conversation around utility scale solar project and the costs and benefits to each partner. As the industry continues to grow, it would be wise to define a regional strategy, which may include innovative approaches on how to locate large scale solar generating projects in ways that take advantage of opportunities that may have positive benefits for the region.

Finally, as renewable energy in all its forms becomes more mainstream, municipalities should continue to advocate for a provincial renewable energy strategy. This strategy should consider impacts to land and communities balanced with the goals and objectives of private investors in the fast-growing industry. There should be an emphasis placed on the importance of good land use planning to achieve the goals of the entire province regarding this industry.

Appendix A: Land Use Themes, Groups and Features

Legend:

Theme: Development, Agricultural, Settlement and Infrastructure, Cultural, and Ecological

Group: Broad groupings of the features (what goes into the model)

Feature: Elements of each group (what gets scored individually, then rolled up)

Example / explanation: Examples or explanations that can go into the user guide

Layers: The GIS layers that might be used to derive this

Settlement and Infrastructure

Group	Feature	Examples / Explanation	Layer	Renewable Energy Regulation notes
Urbanized areas				
	<ul style="list-style-type: none"> Residential / commercial / industrial areas within cities and towns 	<p>Homes within residential subdivisions within towns, cities;</p> <p>Commercial or industrial areas or subdivisions within towns or cities.</p>	Rocky View County (RVC) Parcel Landuse (R-*); R-CRD not included for solar.	
	<ul style="list-style-type: none"> Industrial 	Industrial areas	RVC Parcel Landuse (erased from final settlement area)	
Rural residential				
	<ul style="list-style-type: none"> Grouped Country residential 	Rural residential subdivisions with properties). MDP only have GCR in ASPs and urban fringe of PC.	RVC Parcel Landuse (R-CRD)	
	<ul style="list-style-type: none"> Hamlet 	Small unincorporated communities administered by rural or specialized municipalities	Government of Alberta Municipal Boundaries; Harmony boundary from	

			City of Calgary Growth Projections	
Rural commercial (non-agriculture)	<ul style="list-style-type: none"> Commercial establishments and subdivisions 	<p>Commercial subdivision outside of settlements (e.g., highway commercial district);</p> <p>Commercial establishment outside of settlements (e.g., gas stations, garden centres, motels, work camps)</p>	RVC Parcel_Landuse layer	
Rural industrial (non-agricultural)				
	<ul style="list-style-type: none"> Solar farms 	Utility-scale solar photovoltaic installations over an area of land	Hand digitized from web map reference	
	<ul style="list-style-type: none"> Wind farms 	Utility-scale cluster of wind turbines over an area of land	No wind turbines in region	
	<ul style="list-style-type: none"> Transmission 	Rights-of-way for power lines	Alberta Biodiversity Monitoring Institute (ABMI) Human Footprint layer 2019	
	<ul style="list-style-type: none"> Oil and gas processing plants 	Petrochemical plants, refineries, gas plants. Sour gas facilities south of PC	ABMI Human Footprint layer 2019	
	<ul style="list-style-type: none"> Mineral extraction 	Mines, gravel pits and sand stone mines	ABMI Human Footprint layer 2019	
	<ul style="list-style-type: none"> Power plants 	Coal-fired power stations, dams, and associated buildings and facilities. Sour gas plants, and Old man	No power plants in region	
Transportation				
	<ul style="list-style-type: none"> Divided highways 		ABMI Human Footprint layer 2019; RVC road segments	Alberta Transportation right of ways
	<ul style="list-style-type: none"> Paved roads 	Built and not built	ABMI Human Footprint layer 2019;	

			RVC road segments	
	<ul style="list-style-type: none"> Gravel roads 	Built and not built	ABMI Human Footprint layer 2019; RVC road segments	
	<ul style="list-style-type: none"> Airports 	Airstrips, runways, hangars, control towers, maintenance, exclusion zones.	RVC Airport Boundary, ABMI Human Footprint 2019, Calgary Airport Vicinity Protection Area (AVPA)	
		Airfields (Cowley, private airfields)	RVC Airport Boundary; ABMI HF 2019	
	<ul style="list-style-type: none"> Railways 	Railways, associated rail buildings, rail yards, stations, sidings, rights-of-way	ABMI Human Footprint layer 2019	
Water management				
	<ul style="list-style-type: none"> Reservoirs 	Areas of naturally-flowing water, dammed to provide water for human use. Waterton and Oldman	Government of Alberta Base Features	
	<ul style="list-style-type: none"> Treatment plants 	Industrial facilities for cleaning water for human consumption.	RVC Water Treatment Plants	

Agricultural Theme

Group	Feature	Examples / Explanation	Layers	Renewable Energy Regulation notes
Grazing land				
	<ul style="list-style-type: none"> Native prairie 	Unbroken natural prairie used for grazing livestock	Annual Crop Inventory; ABMI Human Footprint	Avoid public land (AEP)
	<ul style="list-style-type: none"> Tame pasture 	Managed pasture used for grazing livestock	Alberta Ground Vegetation Inventory (GVI)	
Cropland (unirrigated)				

	• Class 1	No significant limitation in use for crops	Canadian Land inventory	
	• Class 2	Moderate limitations that restrict the range of crops or require moderate conservation practices	Canadian Land inventory	
	• Class 3	Moderately severe limitations that restrict the range of crops or require special conservation practices	Canadian Land inventory	
	• Class 4	Severe limitations that restrict the range of crops or require special conservation practices	Canadian Land inventory	
	• Class 5	Very severe limitations that restrict their capability in producing perennial forage crops and improvement practices, are feasible	Canadian Land inventory	
	• Class 6	Only capable of producing perennial forage crops, and improvement practices are not feasible	Canadian Land inventory	
	• Class 7	Soils in this class have no capacity for arable culture or permanent pasture	Canadian Land inventory	
Agriculture support				
	• Agri-business	Auction marts, feedlots / CFOs, seed cleaning plants, Processing plants, commercial greenhouses, aquaculture, hydroponic operations	RVC Parcel Landuse (B-AGR)	
	• Agricultural community	Ag society buildings, race tracks, and residences associated with (and located on) a farm or ranch.	RVC Parcel Landuse (R-RUR)	

Ecological Theme

Group	Feature	Examples / Explanation	Layer	Renewable Energy Regulation notes
Protected areas (public)				
	<ul style="list-style-type: none"> Municipal conservation lands 	Municipal areas where development is restricted in favour of ecological conservation (e.g., environmental reserves, conservation reserves, natural area parks)	RVC Parcel Landuse – S-NOS designations).	No-go (municipality)
	<ul style="list-style-type: none"> Provincial and national protected areas (recreation-focus) 	Areas intended to provide some measure of environmental protection, where facility development is allowed (e.g., provincial and national protected areas recreational, heritage rangelands, natural areas, public land use zones)	Government of Alberta Protected Areas	No-go (AEPA)
	<ul style="list-style-type: none"> Provincial protected areas (conservation-focus) 	Provincial public lands intended to provide environmental protection, where facility development is restricted (e.g., ecological reserves, wilderness areas, wildland parks)	Government of Alberta Protected Areas	No-go (AEPA)
	<ul style="list-style-type: none"> Crown Land 		RVC Crown Land	No-go (AEPA)
Protected areas (private)				
	<ul style="list-style-type: none"> Private Land Conservation 	Private lands with title-attached restrictions in favour of conservation or private lands owned by land trusts and conservancies	Land trust and conservancy datasets.	SALTS and NCC no wind and solar policy

Wildlife habitat				
	<ul style="list-style-type: none"> Species management areas or designations 	<p>E.g., complication of critical habitat for endangered species, ranges for Species of Concern (non-species at Risk), Key Wildlife and Biodiversity Zones, Ramsar sites), Important Bird Areas.</p> <p>In the Calgary area, key trumpeter swan migration wetlands include: Jumping Pound wetlands, East Cochrane Lake, Sibbald Flats and Sibbald Flat East ponds, Pile of Bones Creek, and Frank Lake.</p>	<p>Piping plover waterbodies</p>	<p>SAR: AEPA 101.1.2 piping plover (200m setback)</p>
			<p>Key wildlife and biodiversity zone;</p> <p>Government of Alberta Wildlife Datasets</p>	<p>SAR: AEPA: Avoid or minimize</p>
	<ul style="list-style-type: none"> Important wildlife habitat and vegetation areas 	<p>E.g., Compilation of riparian areas, native grasslands, wildlife movement zones, and important aquatic habitats</p>	<p>Native grasslands:</p> <p>ABMI Human Footprint;</p> <p>Annual Crop Inventory</p>	<p>AUC Rule 007</p> <p>Native Grassland is ranked a high sensitivity layer by AEPA, and the Wildlife <i>Directive for Solar Energy Projects</i> and <i>Wildlife Directive for Alberta Wind Energy Projects</i> outline that native grasslands should be avoided</p>
			<p>Wildlife movement areas:</p> <p>ABMI structural connectivity model</p>	<p>Represented by key wildlife and biodiversity zones</p>
			<p>Riparian areas:</p> <p>Alberta Government Riparian Areas</p>	

			Escarpment and coulees	Not included –data gap
			Forest: Annual Crop Inventory	
Waterways (moving, lotic)		Includes all orders of streams, headwaters streams		
	<ul style="list-style-type: none"> Rivers 		Government of Alberta Base Features	Wildlife Directives for Solar Energy Projects Standards 100.1.10: no-go within 100 m of large permanent watercourse
	<ul style="list-style-type: none"> Streams and creeks 		Government of Alberta Base Features	Wildlife Directives for Solar Energy Projects Standards 100.1.10: no-go within 45 m of small permanent watercourses and intermittent watercourses or springs
Waterbodies (standing, lentic)				
	<ul style="list-style-type: none"> Lakes 	Technically a class of wetland, includes all named lakes	Government of Alberta Base Features	<i>Wildlife Directives for Solar Energy Projects 100.1.8 and Wildlife Directives for Wind Energy Projects 100.2.8</i> no-go area of 1000 m setback from named lakes
	<ul style="list-style-type: none"> Un-named lakes 		Government of Alberta Base Features	
	<ul style="list-style-type: none"> Classed wetlands 	Includes all wetlands that under the Water Act would have to be replaced if lost	Alberta Biodiversity Monitoring Institute Wetland Inventory	Water Act, Wetland Policy, SSRP, and <i>Wildlife Directive for Solar Energy Projects and Wildlife Directive for</i>

				<i>Alberta Wind Energy Projects</i> : no-go with 100 m buffer around wetlands classes as bog, fen, marsh, shallow open water and swamp.
	<ul style="list-style-type: none"> Groundwater aquifer recharge areas 	Infiltration zones, beaver ponds		Not included – data gap

Cultural Theme

Group	Feature	Examples / Explanation	Layer	Renewable Energy Regulation notes
Religious / cultural				
	Cemeteries		RVC MPlaces	
	<ul style="list-style-type: none"> Sacred sites 	Areas with demonstrated spiritual or religious significance; assumed included in Historical Resource Value		
	<ul style="list-style-type: none"> First Nations Reserves 		Government of Alberta Municipal Boundaries	Not included in analysis
	<ul style="list-style-type: none"> Buffalo Jump 		Hand digitized from online images	
Recreation				
	<ul style="list-style-type: none"> Recreation facilities 	Picnic areas, day use areas, boating access to reservoirs, golf courses, provincial recreation areas, ski hills, arenas, curling rinks, swimming pools, multi-rec buildings, amusement parks,	ABMI Human Footprint 2019; RVC MPlaces	Just include footprint

		campgrounds outside of urbanized areas		
	<ul style="list-style-type: none"> Recreational rivers, lakes, reservoirs, and streams 	Used for fishing, boating, swimming	Government of Alberta Base Features	Just include footprint
	<ul style="list-style-type: none"> Provincial Parks 	Big Hill Springs, Bragg Creek, Glenbow Ranch	Alberta Parks and Protected Areas	
	<ul style="list-style-type: none"> Calgary Parks 	Haskayne Legacy, Bearspaw	Hand digitized	
	<ul style="list-style-type: none"> Conservation Sites 	Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, Mckinnon Flats	Hand digitized	
	<ul style="list-style-type: none"> Provincial habitat areas 	Perrenoud Wildlife Habitat Areas	Hand digitized	
Historic resources				
	<ul style="list-style-type: none"> Recognized historic resources 	Heritage landscapes, Archeological sites, identified and classed by the provincial or municipal government	Government of Alberta Historic Resources (HRV 1-2)	AB Culture and Tourism No-go
			HRV 3	AB Culture and Tourism Avoid
			HRV 4	AB Culture and Tourism Avoid
			HRV 5	AB Culture and Tourism Avoid; excluded from modelling

Wind and Solar Energy Development

Group	Feature	Examples / Explanation	Layer	Renewable Energy Regulation notes
Renewable Energy				
	<ul style="list-style-type: none"> Wind 	Suitability area for wind based on speed (Wind resource < 3m/sec is sub-optimal.	Government of Alberta Municipal Boundaries, Derived no-go areas	

	<ul style="list-style-type: none"> Solar 	Suitability area for solar based on solar radiation value	Government of Alberta Annual Solar Radiation 1971-2000, Government of Alberta Municipal Boundaries, Derived no-go areas	
--	---	---	---	--

Appendix B: Solar Feature Scoring Survey

Rocky View County Municipal Development Suitability Tool for Solar Development

Hello and thank you for helping score and determine the features we should include in the Rocky View County's *Municipal Landuse Suitability Tool for Renewable Energy Development*. You will be asked to fill in 2 surveys - this survey is focused on solar development:

You will be asked to provide a score to represent how you value each feature in relation to the theme area and in consideration of solar energy development.

The features are gathered under four themes:

- 1. Agriculture;**
- 2. Ecological;**
- 3. Cultural; and**
- 4. Settlements and Infrastructure.**

The feature scores will be integrated into a model to help identify the high-value landscapes for each theme, and the most appropriate places for solar energy development.

Agriculture Theme

The agriculture features you will be asked to score include:

- Grazing lands/pasture on native prairie and tame pasture;
- Lands of high value to support crops;
- lands of high value to support irrigated crops; and
- Agricultural community infrastructure.

The scores will help us identify high value agriculture lands in Rocky View that are impacted by solar development.

1. Please score **grazing lands** in terms of their value to the agriculture theme and in relation to the impact from solar development:

	do not include	very low	low	medium	high	very high
Grazing land on native prairie	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grazing land on tame pasture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

2. Please score **Land Suitability Rating Classes (LSRC)** in terms of their value to the agriculture theme and in relation to the impact from solar development (*LSRC will be used to identify high value for growing crops*):

	do not include	very low	low	medium	high	very high
Land Suitability with slight limitations to growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Land Suitability with moderate limitations to growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Land Suitability with severe limitations to growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Land Suitability with very severe limitations to growth	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

3. Please score **Agri-business** (auction marts, feedlots, seed cleaning plants, etc.) and **Agricultural Community** (ag society buildings, race tracks, etc.) in terms of their value to the agriculture theme and in relation to the impact from **solar** development:

	do not include	very low	low	medium	high	very high
Agri-business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Agricultural Community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

4. Are there any features missing from the **Agriculture Theme**?

- Yes
- No

If yes, please list any missing features:

Ecological Theme

The ecological features you will be asked to score include:

- Municipal conservation lands (Municipal Reserves and Environmental Reserves)
- Private conservation lands
- Species management designations
- Important wildlife habitat or vegetation areas
- Groundwater aquifer recharge areas

The scores will help us identify high value ecological lands in Rocky View County that are impacted by solar development.

The following features are listed as "no-go" based on regulations, they will be included in modelling but you will not be asked to score them:

- Crown Land
- Protected Areas
- Wetlands (with 100 m buffer)
- Large permanent rivers (with 100 m buffer)
- Smaller permanent watercourses (with 45 m buffer)
- Intermittent watercourses and springs (with 45 m buffer)
- Species at risk restricted areas (e.g., trumpeter swan and 800 m buffer)

5. Please score **conservation lands (Municipal and Environmental Reserves)** in terms of their value to the ecological theme and in relation to the impact from solar development:

	do not include	very low	low	medium	high	very high
municipal conservation lands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
private conservation lands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

6. Please score the following **species management areas or designations** in terms of their value to the ecological theme and in relation to the impact from **solar** development:

	do not include	very low	low	medium	high	very high
Key Wildlife and Biodiversity Zones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grizzly Bear Zones	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

7. Please score the following important **wildlife habitat or vegetation areas** in terms of their value to the ecological theme and in relation to the impact from **solar** development:

	do not include	very low	low	medium	high	very high
native grasslands	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
wildlife movement areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
riparian areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

8. Please score the following **waterways and water-bodies** in terms of their value to the ecological theme and in relation to the impact from **solar** development:

	do not include	very low	low	medium	high	very high
lakes (unnamed)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
groundwater aquifer recharge areas	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

9. Are there any features missing from the **Ecological Theme**?

- Yes
- No

If yes, please list any missing features:

Cultural Theme

10. The following features were identified as **important cultural features** by Rocky View County Municipal Land Use Suitability Tool participants. Please score each feature in terms of value to the cultural theme and in relation to impacts from solar development.

	do not include	very low	low	medium	high	very high
Wearmouth (jumpingpound) Buffalo Jump	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cemeteries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dixon Stevenson Trail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Historic schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scenic views of Rocky Mountains (east of Highway 22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calgary Parks (Haskayne, Bearspaw)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provincial habitat area (Perrenoud Wildlife Habitat Area)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

Visual Aid: Wearmouth (jumpingpound) Buffalo Jump with buffers of different sizes



11. The following features were identified as important cultural features. Please select a buffer to apply when considering **solar development** (the scores provided above will be applied to selected buffer). 0 m = no buffer.

	0 m	300 m	500 m	1000 m	2000 m
Wearmouth (jumpingpound) Buffalo Jump	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cemeteries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dixon Stevenson Trail	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Historic schools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scenic views of Rocky Mountains (east of Highway 22)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calgary Parks (Haskayne, Bearspaw)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provincial habitat area (Perrenoud Wildlife Habitat Area)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

Settlement and Infrastructure Theme

The following features are included in the survey even though they have specific rights-of-ways/setbacks that will be included in the modeling.

- divided highway
- paved road
- gravel road
- railway
- airport
- transmission line

Here we provide you with an opportunity to identify buffers that may be incorporated if larger than established setbacks (if a linear feature please gauge the distance from the features center-line) when considering **solar** development.

In addition many of the features listed below have municipal by-laws (please refer back to the attachment) which will be considered in the modeling.

13. Please provide a buffer from **solar** development for the following **urbanized areas, rural residential and rural commercial non-agriculture features** (0 m = no buffer).

	0 m	100 m	300 m	500 m	1000 m	2000 m
Urbanized areas (residential/commercial areas in cities/towns)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grouped County Residential	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hamlets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial Establishments and Subdivisions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

14. Please provide a buffer from **solar** development for the following **rural industrial features non-agriculture** (0 m = no buffer).

	0 m	100 m	300 m	500 m	1000 m	2000 m
Solar farms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wind farms	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transmission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oil and Gas Processing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mineral Extraction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Power plants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Waste transfer sites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

15. Please provide a buffer from **solar** development for the following **transportation features** (0 m = no buffer).

	0 m	100 m	300 m	500 m	1000 m	2000 m
divided highways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
paved roads	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
gravel roads	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
airports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
airfields	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
railways	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

16. Please provide a buffer from **solar** development for the following **water management features** (0 m = no buffer).

	0 m	100 m	300 m	500 m	1000 m	2000 m
Reservoirs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Treatment Plants	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments:

Appendix C: Summary of Survey Results

The following summarizes results from the wind and solar survey sent to Rocky View County staff and council to inform the Municipal Land Use Suitability Tool (MLUST) for renewable energy development. Survey recipients were asked to select the value and/or buffer of land assets in agricultural, ecological, cultural and infrastructure/settlement theme areas. The scores/buffers generated in the survey will help to inform the MLUST modelling process. We will be reviewing the summarized scores at workshop 1.

In the survey you were asked to state the value from very low to very high, for the model we convert these into scores from 0 to 100, based on the table depicted below. Average scores from all responses are selected for use in the MLUST modelling process and are depicted in red on the bar graphs.

Value	Score
Do not include	0
Very low	0
Low	25
Medium	50
High	75
Very high	100

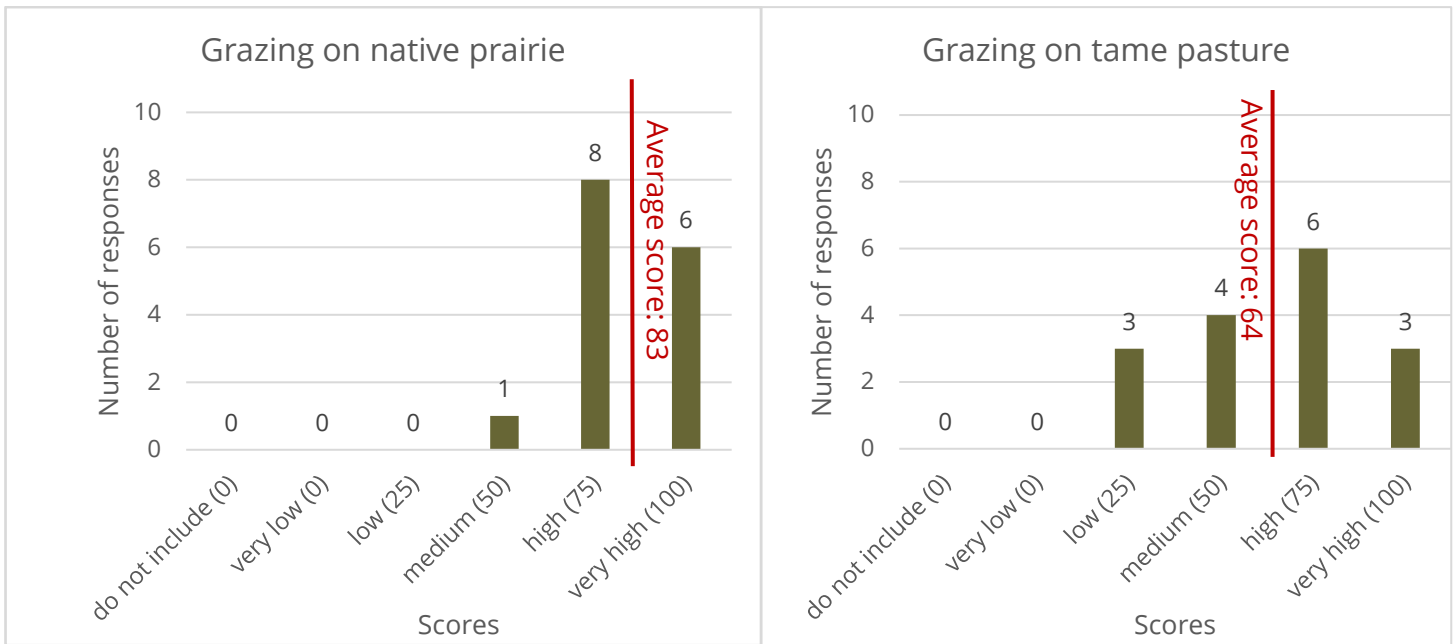
Solar Survey Results

Solar - Agriculture theme area

Grazing lands

Please score grazing lands in terms of their value to the agriculture theme and in relation to the impact from **solar** development.

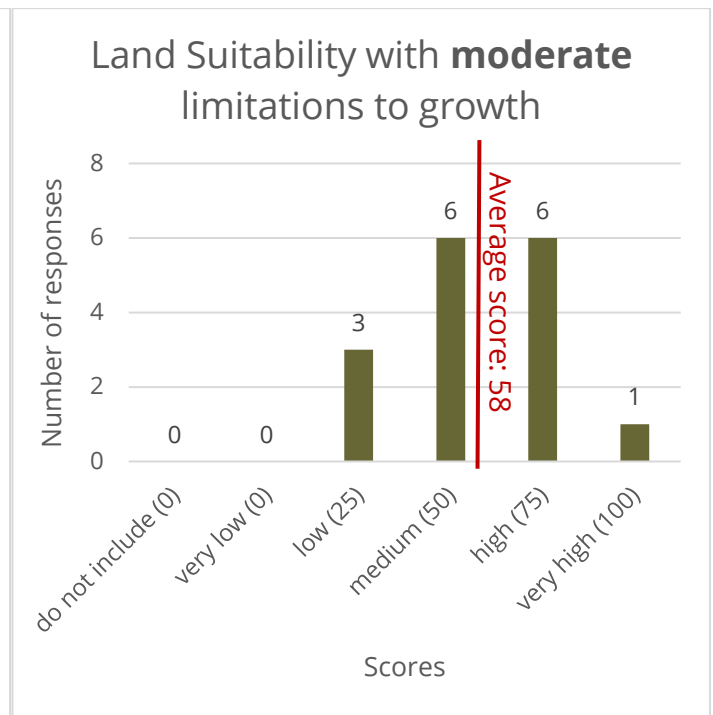
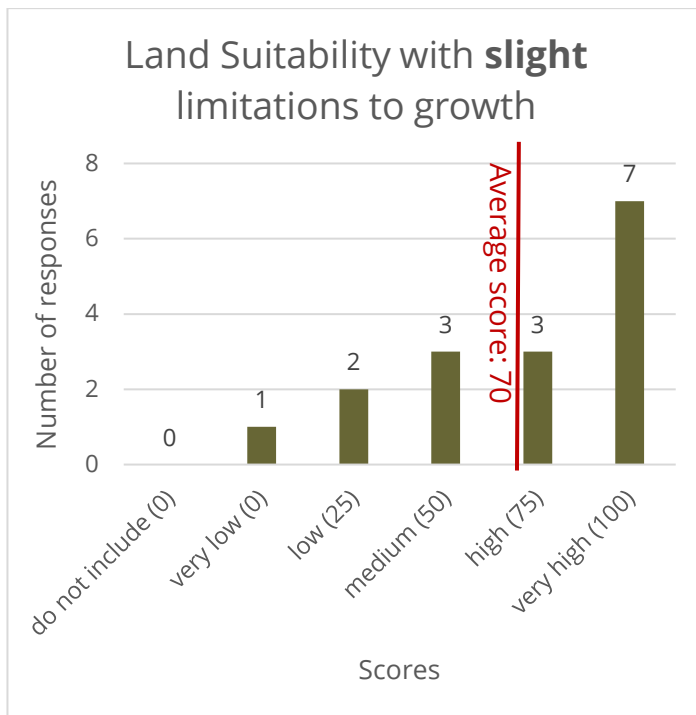
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Grazing land on native prairie	0.00%	0.00%	0.00%	6.67%	53.33%	40.00%	15
Grazing land on tame pasture	0.00%	0.00%	18.75%	25.00%	37.50%	18.75%	16



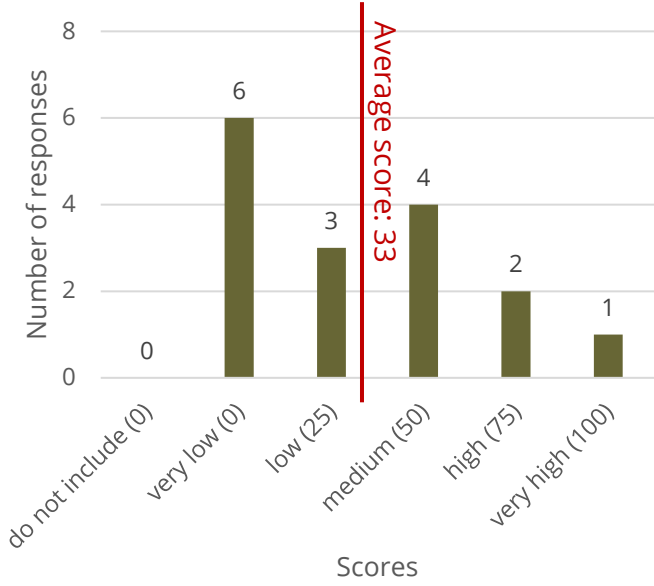
Land Suitability Rating Classes

Please score Land Suitability Rating Classes (LSRC) in terms of their value to the agriculture theme and in relation to the impact from **solar** development (LSRC will be used to identify high value for growing crops):

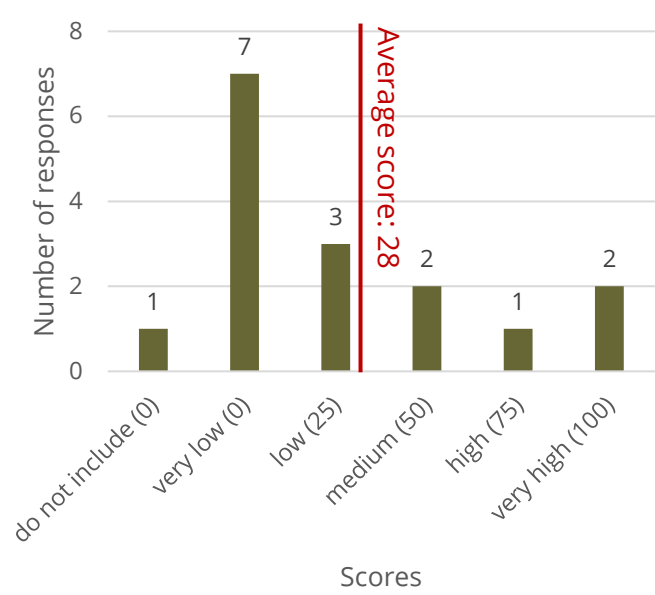
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Land Suitability with slight limitations to growth	0.00%	6.25%	12.50%	18.75%	18.75%	43.75%	16
Land Suitability with moderate limitations to growth	0.00%	0.00%	18.75%	37.50%	37.50%	6.25%	16
Land Suitability with severe limitations to growth	0.00%	37.50%	18.75%	25.00%	12.50%	6.25%	16
Land Suitability with very severe limitations to growth	6.25%	43.75%	18.75%	12.50%	6.25%	12.50%	16



Land Suitability with **severe** limitations to growth



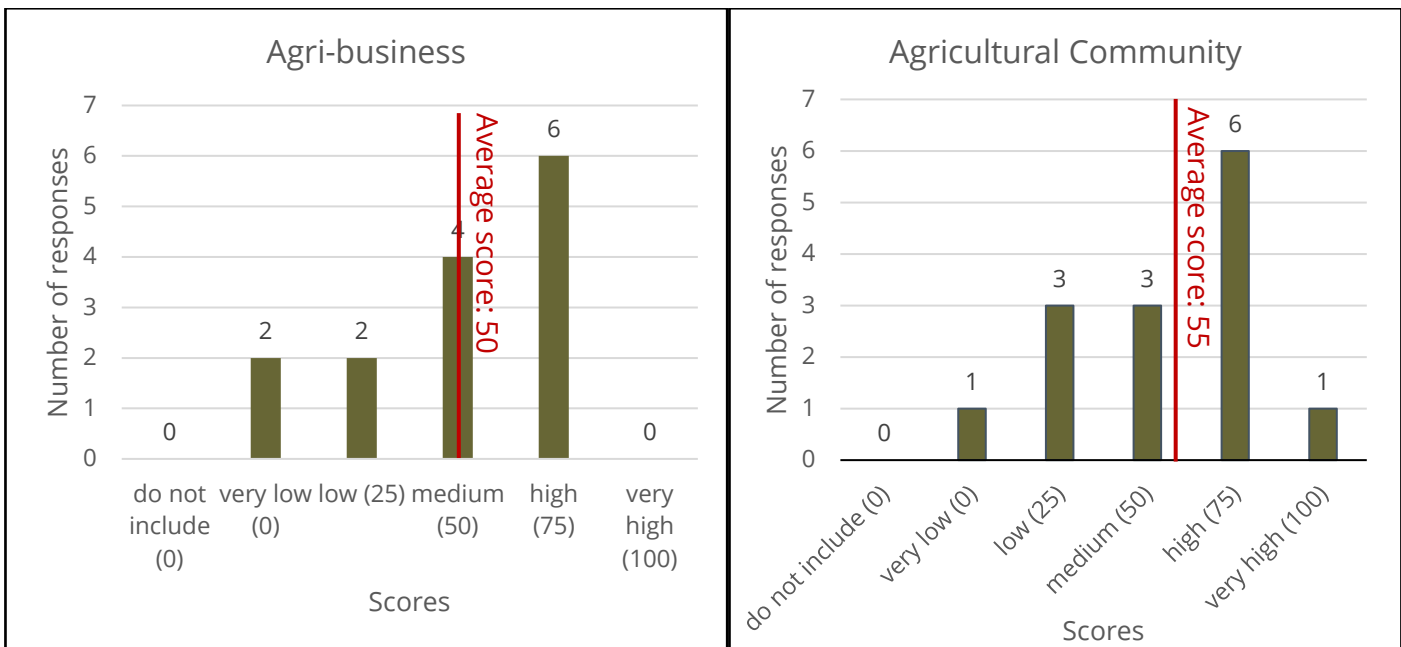
Land Suitability with **very severe** limitations to growth



Agri-business

Please score Agri-business (auction marts, feedlots, seed cleaning plants, etc.) and Agricultural Community (ag society buildings, race tracks, etc.) in terms of their value to the agriculture theme and in relation to the impact from **solar** development:

	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Agri-business	0.00%	14.29%	14.29%	28.57%	42.86%	0.00%	14
Agricultural Community	0.00%	7.14%	21.43%	21.43%	42.86%	7.14%	14



Solar - Ecological theme area

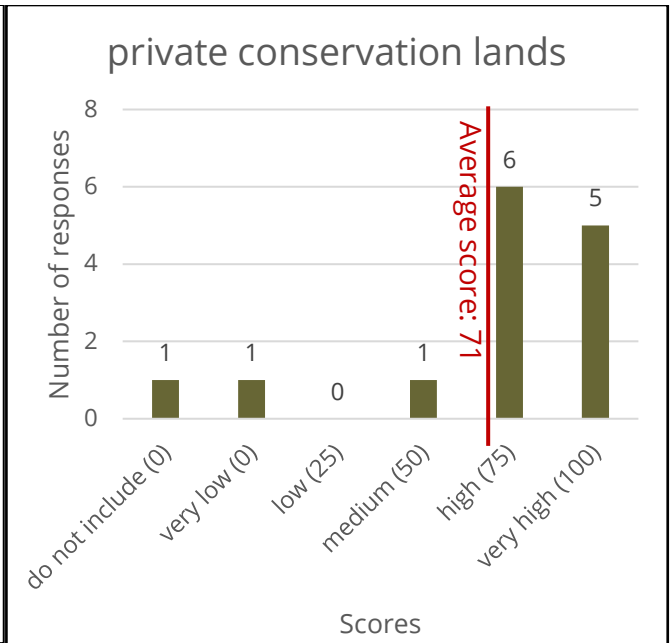
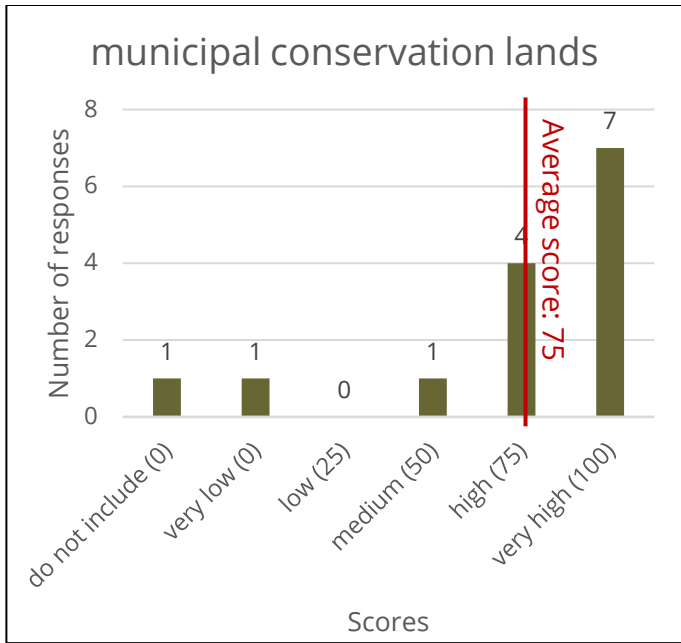
No-go areas:

- Provincial and national protected areas
- Private conservation lands (SALTS and NCC have no wind and solar policy on easements and owned land)
- Within 800 m from trumpeter swan waterbodies and watercourses (AEP Wildlife Directives for Wind and Solar Development)
- Within 200 m from piping plover waterbody (AEP Wildlife Directives for Wind and Solar Development)
- Within 100 m from top of valley breaks (including coulees)
- Within 100 m of large permanent water bodies (AEP Wildlife Directive for Solar Development)
- Within 45 m of small permanent waterbodies and intermittent watercourses or springs (AEP Wildlife Directive for Solar Development)
- Within 1000 m of named lakes (AEP Wildlife Directives for Wind and Solar Development)
- Within 100 m of wetlands classed as bog, fen, marsh, shallow open water and swamp (Water Act, Wetland Policy, SSRP, AEP Wildlife Directives for Wind and Solar)

Conservation lands (municipal environmental reserves)

Please score conservation lands (Municipal Environmental Reserves) in terms of their value to the ecological theme and in relation to the impact from **solar** development:

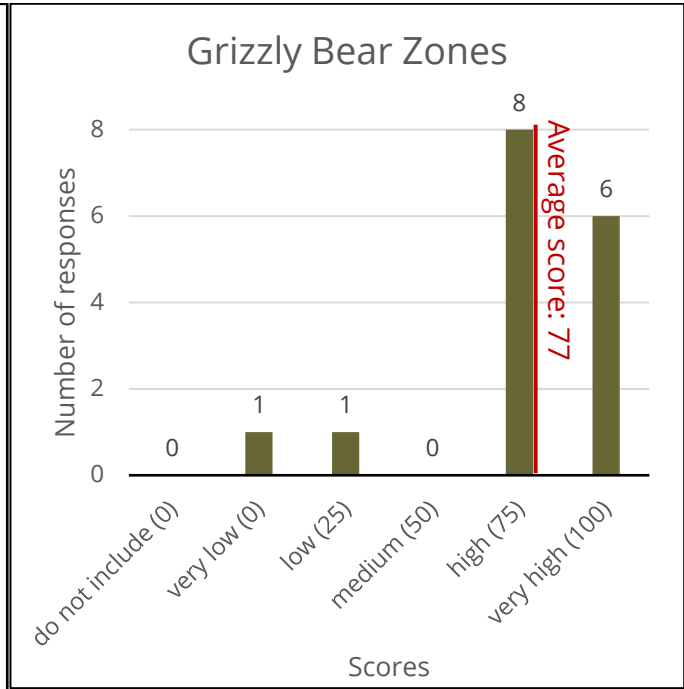
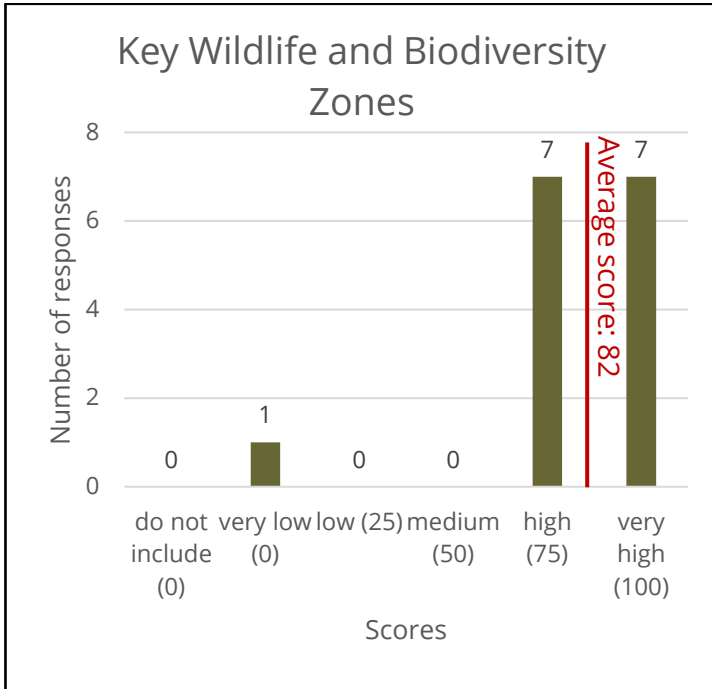
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
municipal conservation lands	7.14%	7.14%	0.00%	7.14%	28.57%	50.00%	14
private conservation lands	7.14%	7.14%	0.00%	7.14%	42.86%	35.71%	14



Species management areas or designations

Please score the following species management areas or designations in terms of their value to the ecological theme and in relation to the impact from **solar** development:

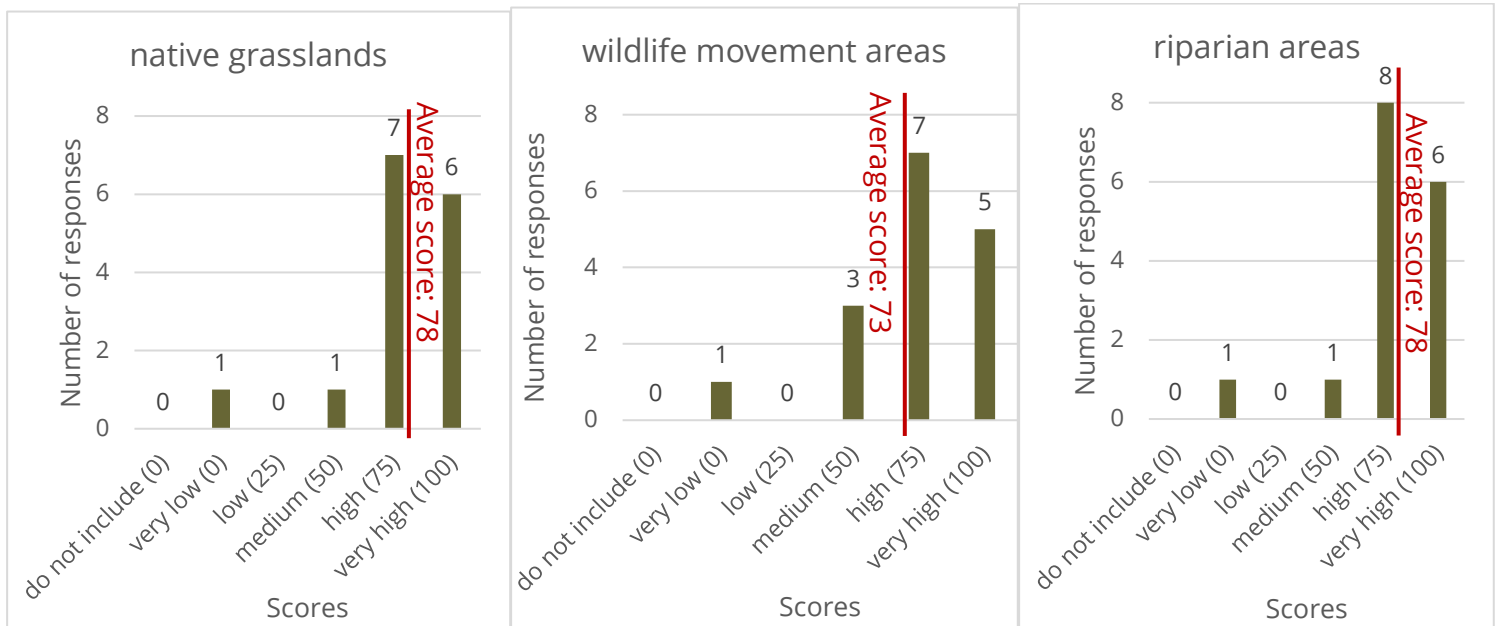
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Key Wildlife and Biodiversity Zones	0.00%	6.67%	0.00%	0.00%	46.67%	46.67%	15
Grizzly Bear Zones	0.00%	6.25%	6.25%	0.00%	50.00%	37.50%	16



Important wildlife of habitat areas

Please score the following important wildlife habitat or vegetation areas in terms of their value to the ecological theme and in relation to the impact from **solar** development:

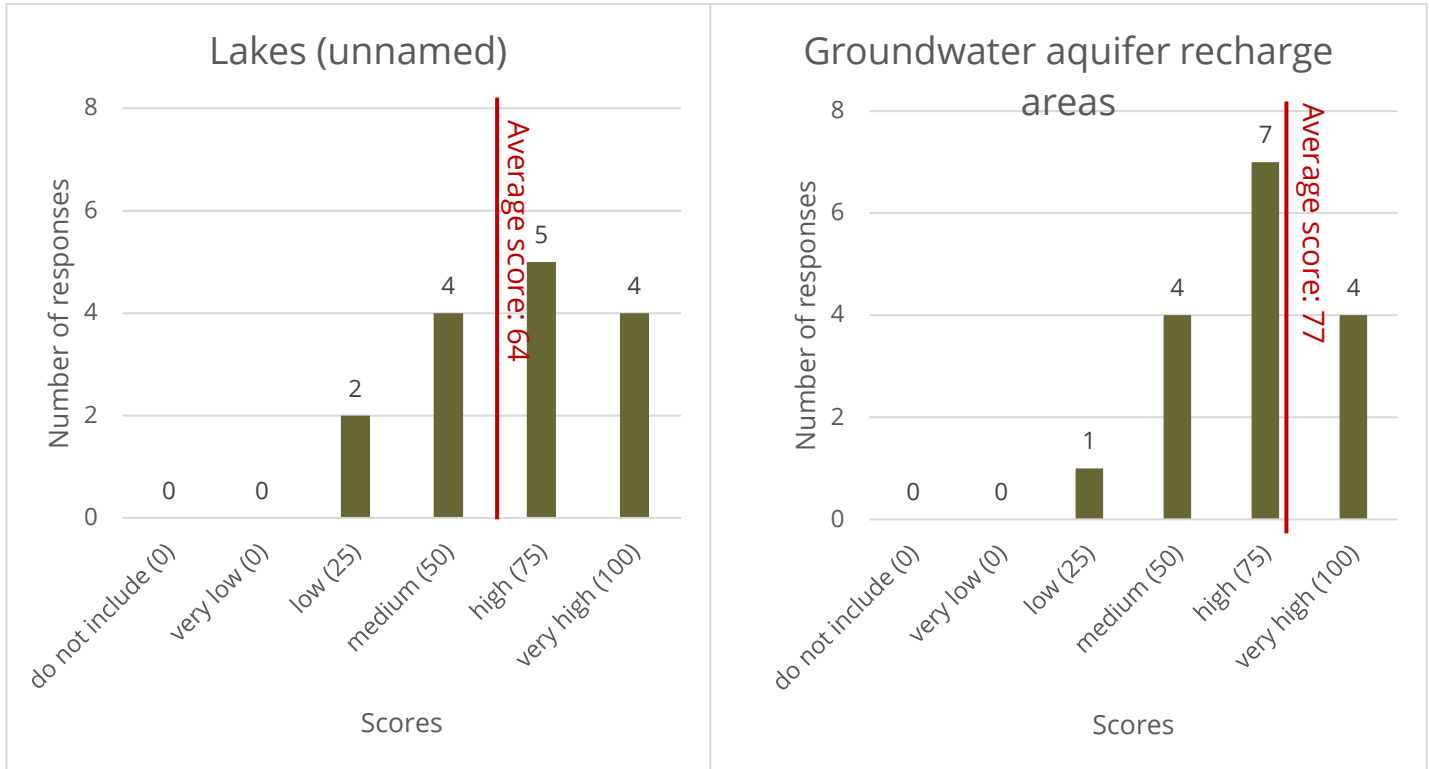
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
native grasslands	0.00%	6.67%	0.00%	6.67%	46.67%	40.00%	15
wildlife movement areas	0.00%	6.25%	0.00%	18.75%	43.75%	31.25%	16
riparian areas	0.00%	6.25%	0.00%	6.25%	50.00%	37.50%	16



Waterways and water-bodies

Please score the following waterways and water-bodies in terms of their value to the ecological theme and in relation to the impact from **solar** development:

	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total
lakes (unnamed)	0.00%	0.00%	13.33%	26.67%	33.33%	26.67%	15
groundwater aquifer recharge areas	0.00%	0.00%	6.25%	25.00%	43.75%	25.00%	16



Solar - Cultural theme area

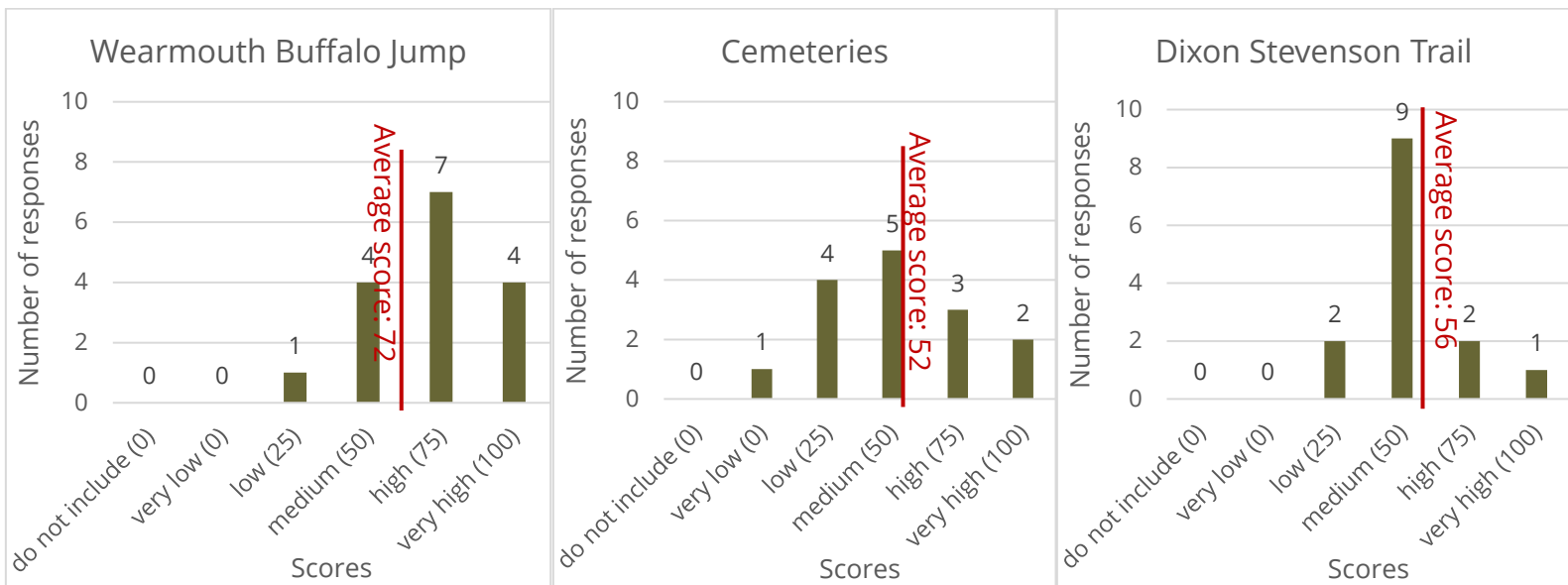
No-go areas:

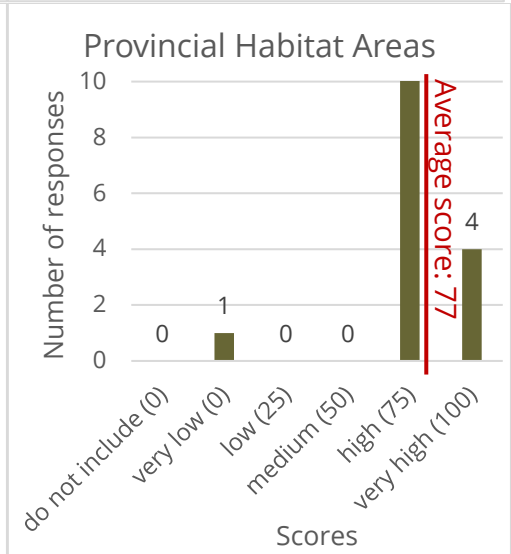
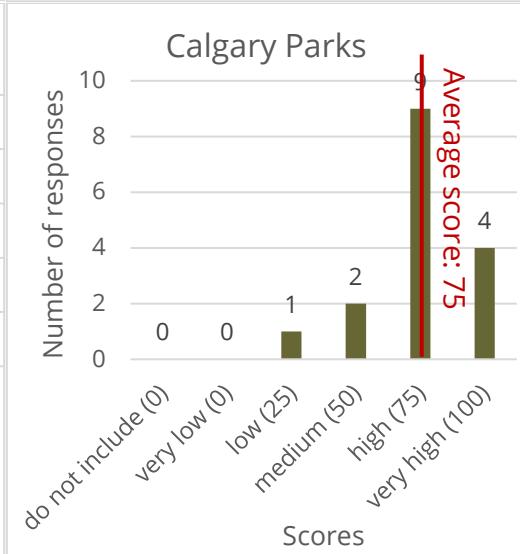
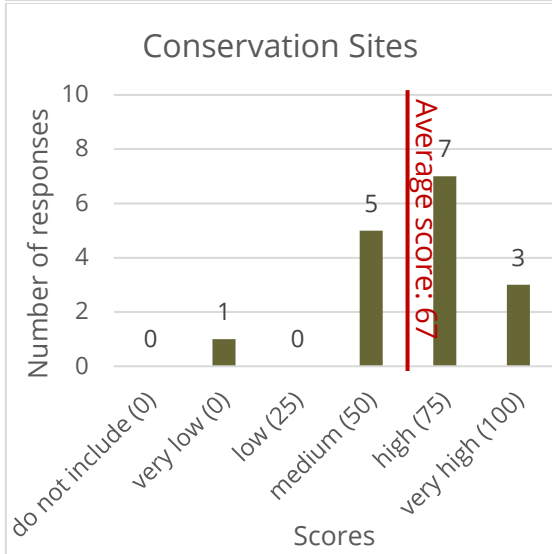
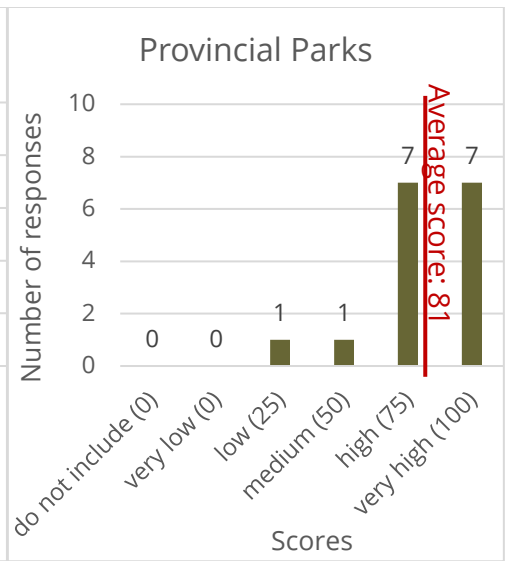
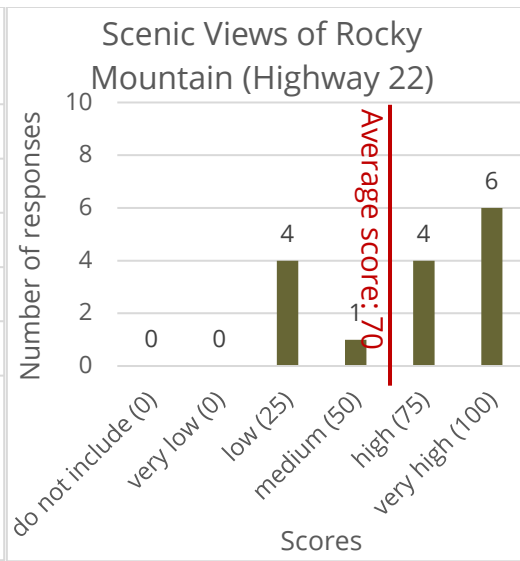
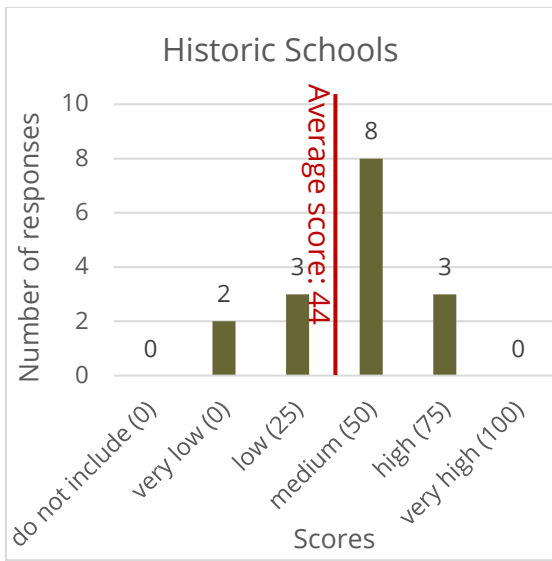
- Historic Resource Value (HRV) 1 and 2 (Ab Culture and Tourism)

Cultural features

The following features were identified as important cultural features by Rocky View County Municipal Land Use Suitability Tool participants. Please score each feature in terms of value to the cultural theme and in relation to impacts from **solar** development.

	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total
Wearmouth (jumpingpound) Buffalo Jump	0.00%	0.00%	6.25%	25.00%	43.75%	25.00%	16
Cemeteries	0.00%	6.67%	26.67%	33.33%	20.00%	13.33%	15
Dixon Stevenson Trail	0.00%	0.00%	14.29%	64.29%	14.29%	7.14%	14
Historic schools	0.00%	12.50%	18.75%	50.00%	18.75%	0.00%	16
Scenic views of Rocky Mountains (east of Highway 22)	0.00%	0.00%	26.67%	6.67%	26.67%	40.00%	15
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	0.00%	0.00%	6.25%	6.25%	43.75%	43.75%	16
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	0.00%	6.25%	0.00%	31.25%	43.75%	18.75%	16
Calgary Parks (Haskayne, Bears paw)	0.00%	0.00%	6.25%	12.50%	56.25%	25.00%	16
Provincial habitat area (Perrenoud Wildlife Habitat Area)	0.00%	6.25%	0.00%	0.00%	68.75%	25.00%	16



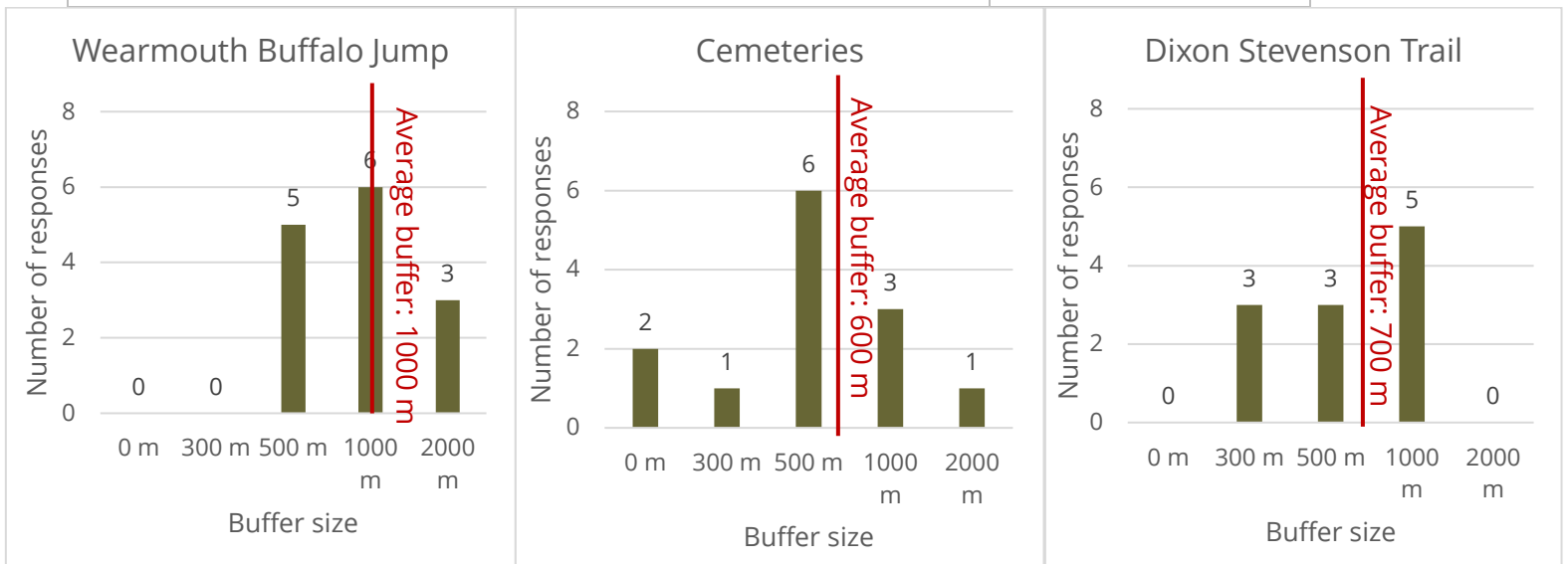


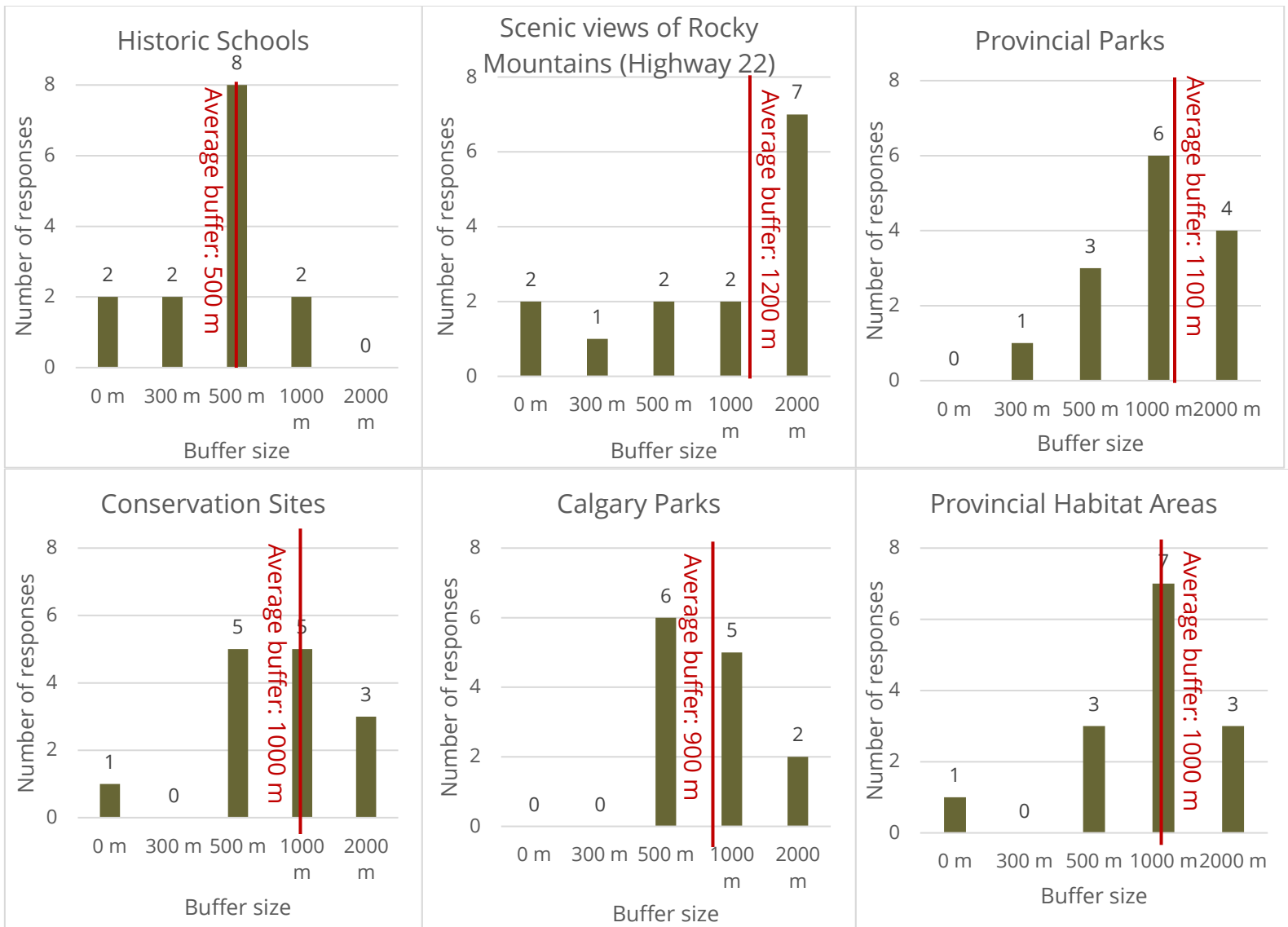
Buffer from cultural features

Please provide a **buffer** from solar development for the following cultural features. (0 m = no buffer)

	0 m	300 m	500 m	1000 m	2000 m	Total
Wearmouth (Jumpingpound) Buffalo Jump	0.00%	0.00%	35.71%	42.86%	21.43%	14
Cemeteries	15.38%	7.69%	46.15%	23.08%	7.69%	13
Dixon Stevenson Trail	0.00%	27.27%	27.27%	45.45%	0.00%	11
Historic schools	14.29%	14.29%	57.14%	14.29%	0.00%	14
Scenic views of Rocky Mountains (east of Highway 22)	14.29%	7.14%	14.29%	14.29%	50.00%	14
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	0.00%	7.14%	21.43%	42.86%	28.57%	14
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	7.14%	0.00%	35.71%	35.71%	21.43%	14
Calgary Parks (Haskayne, Bearspaw)	0.00%	0.00%	46.15%	38.46%	15.38%	13
Provincial habitat area (Perrenoud Wildlife Habitat Area)	7.14%	0.00%	21.43%	50.00%	21.43%	14

Cultural feature	Average buffer size selected rounded to nearest 100 (m)
Wearmouth (Jumpingpound) Buffalo Jump	1000
Cemeteries	600
Dixon Stevenson Trail	700
Historic schools	500
Scenic views of Rocky Mountains (west of Highway 22)	1200
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	1100
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	1000
Calgary Parks (Haskayne, Bearspaw)	900
Provincial habitat area (Perrenoud Wildlife Habitat Area)	1000





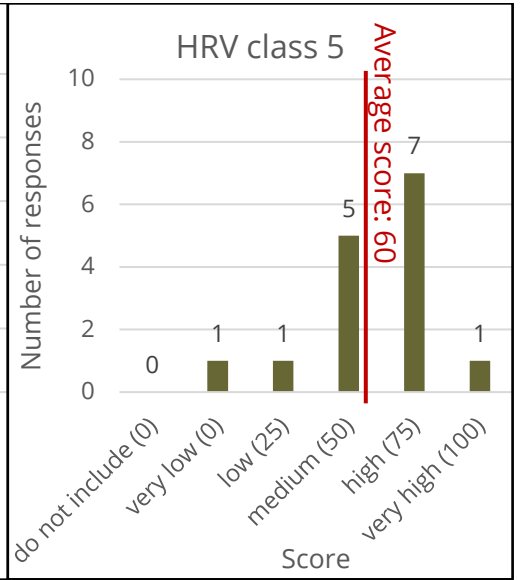
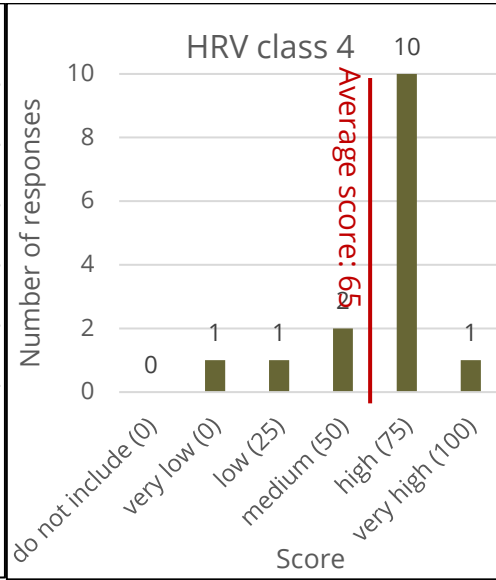
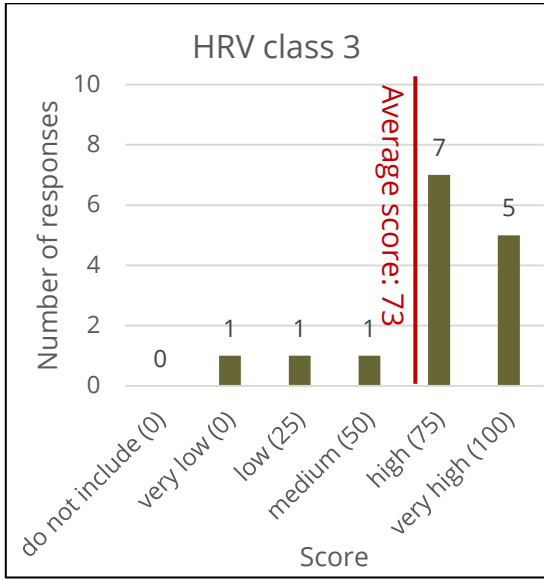
Historic resource values

Historic Resource Values (HRV) layer is provided by GOA to help developers, industry representatives, and regulators determine if a proposed development might affect historic resources. There are five classes, HRV class 1 and 2 are regulated as no-go and you are not asked to score them. Please score HRV class 3 to 5 based on their level of importance to the cultural theme and in relation to the impact from **solar** development:

- HRV class 3: contains a significant historic resource that will likely require avoidance
- HRV class 4: contains a historic resource that may require avoidance
- HRV class 5: high potential to contain a historic resource

	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
HRV class 3: contains a significant historic resource that will likely require avoidance	0.00%	6.67%	6.67%	6.67%	46.67%	33.33%	15

HRV class 4: contains a historic resource that may require avoidance	0.00%	6.67%	6.67%	13.33%	66.67%	6.67%	15
HRV class 5: high potential to contain a historic resource	0.00%	6.67%	6.67%	33.33%	46.67%	6.67%	15



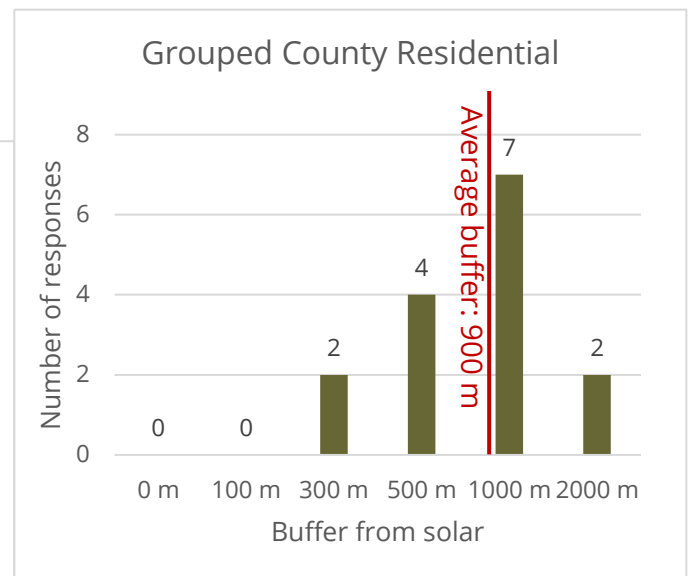
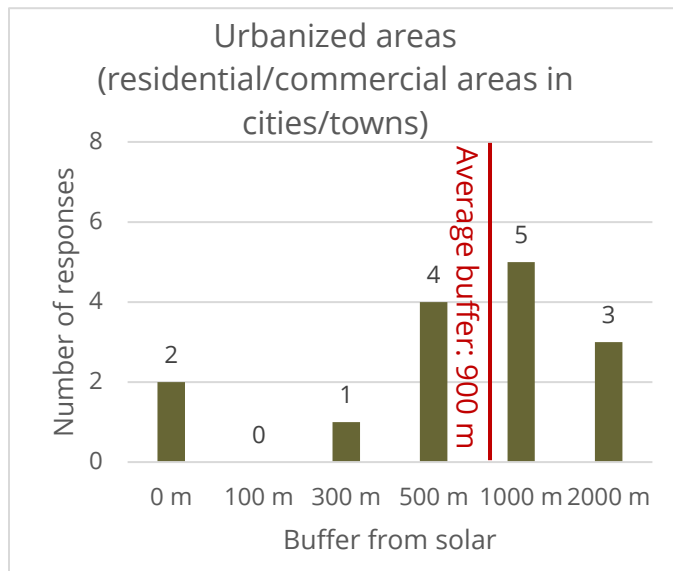
Solar - Settlement and infrastructure theme area

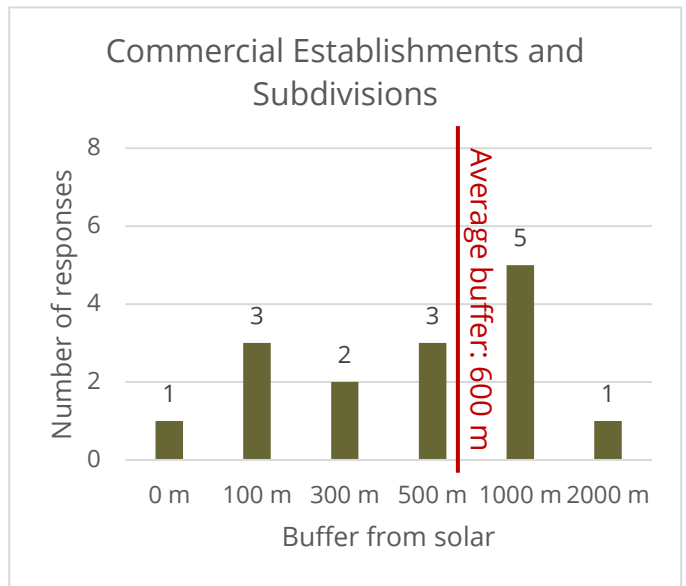
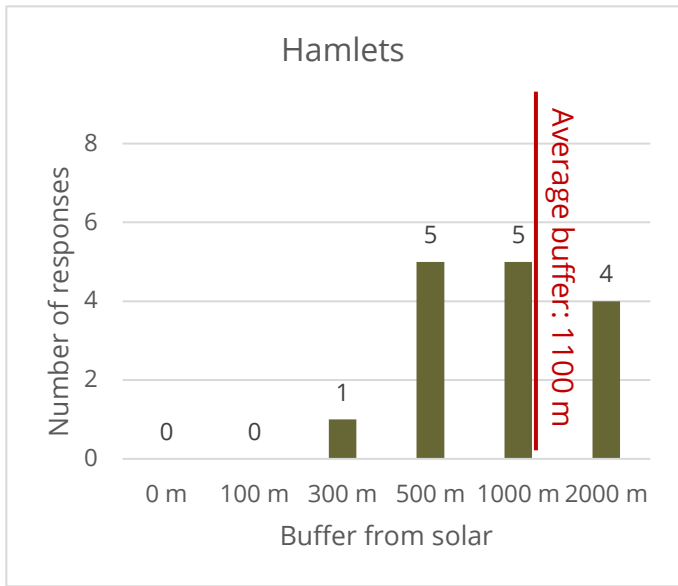
Buffer for urbanized areas, rural residential and rural commercial (non-agriculture) features

Please provide a buffer from **solar** development for the following urbanized areas, rural residential and rural commercial non-agriculture features. (0 m = no buffer)

	0 m	100 m	300 m	500 m	1000 m	2000 m	Total
Urbanized areas (residential/commercial areas in cities/towns)	13.33%	0.00%	6.67%	26.67%	33.33%	20.00%	15
Grouped County Residential	0.00%	0.00%	13.33%	26.67%	46.67%	13.33%	15
Hamlets	0.00%	0.00%	6.67%	33.33%	33.33%	26.67%	15
Commercial Establishments and Subdivisions	6.67%	20.00%	13.33%	20.00%	33.33%	6.67%	15

Feature	Average buffer size selected rounded to nearest 100 (m)
Urbanized areas (residential/commercial areas in cities/towns)	900
Grouped County Residential	900
Hamlets	1100
Commercial Establishments and Subdivisions	600



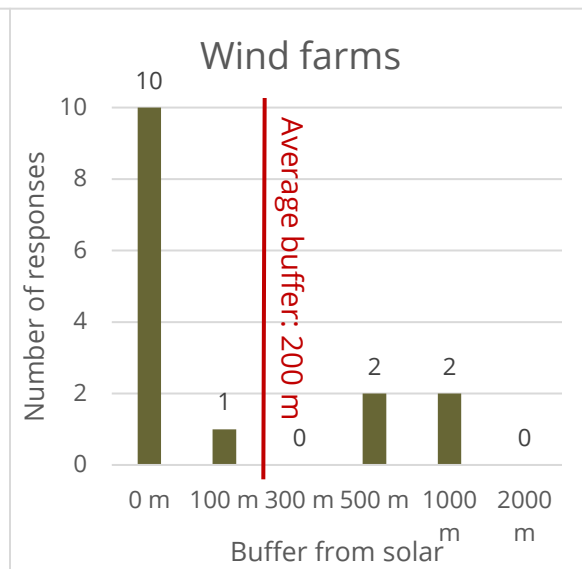
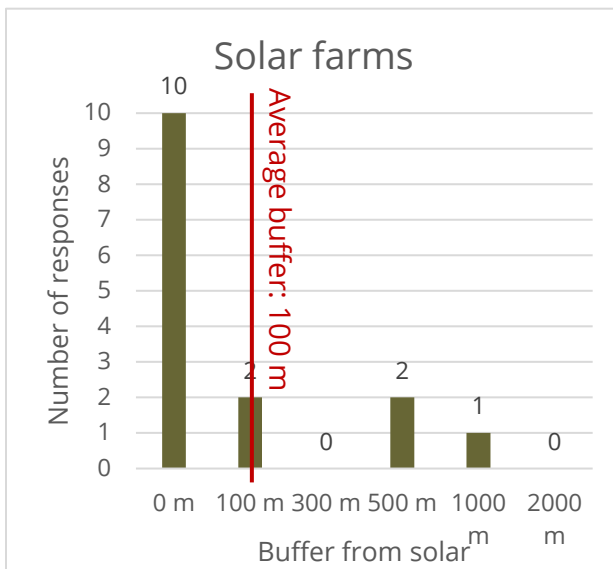


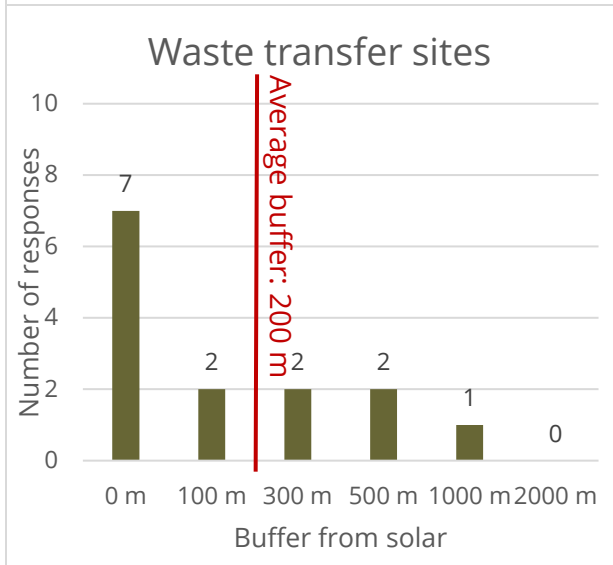
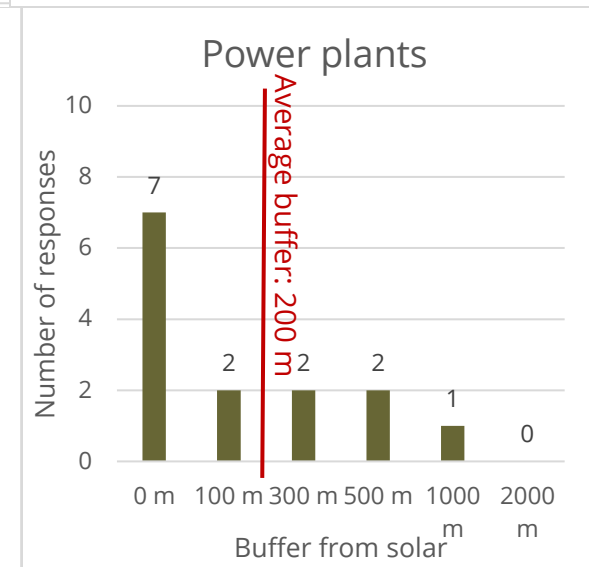
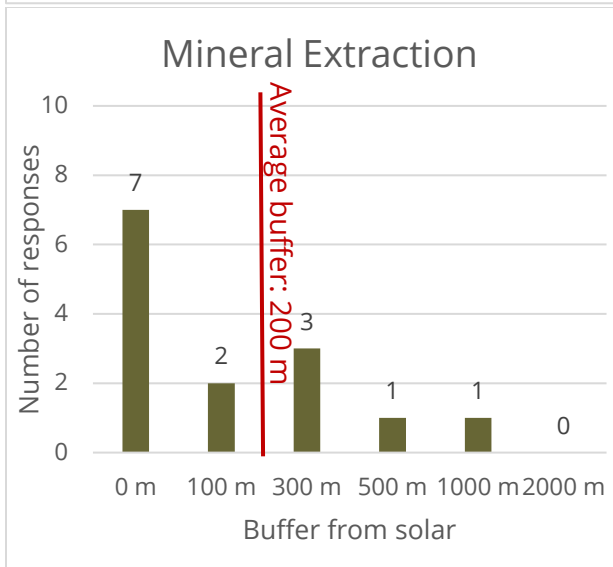
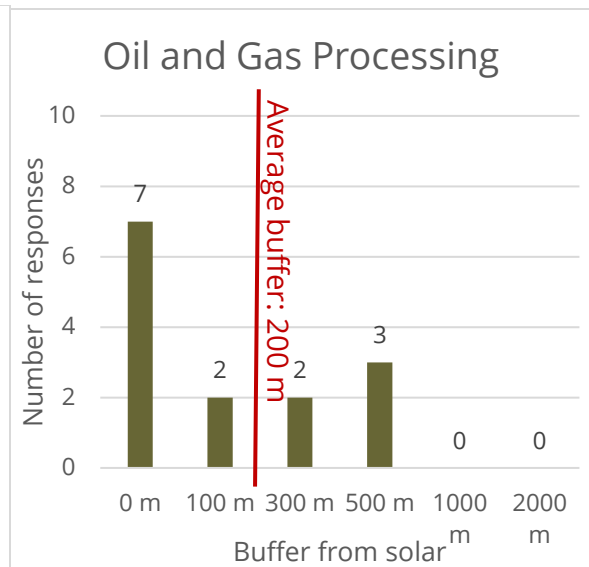
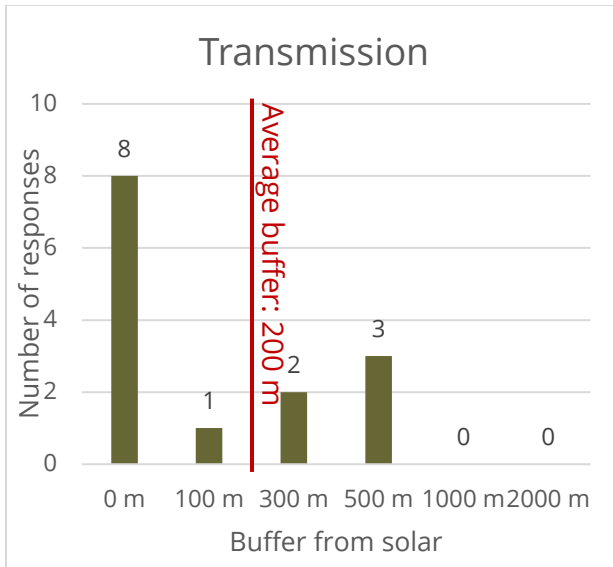
Buffer for rural industrial (non-agriculture) features

Please provide a buffer from **solar** development for the following rural industrial features non-agriculture. (0 m = no buffer)

	0 m	100 m	300 m	500 m	1000 m	2000 m	Total responses
Solar farms	66.67%	13.33%	0.00%	13.33%	6.67%	0.00%	15
Wind farms	66.67%	6.67%	0.00%	13.33%	13.33%	0.00%	15
Transmission	57.14%	7.14%	14.29%	21.43%	0.00%	0.00%	14
Oil and Gas Processing	50.00%	14.29%	14.29%	21.43%	0.00%	0.00%	14
Mineral Extraction	50.00%	14.29%	21.43%	7.14%	7.14%	0.00%	14
Power plants	50.00%	14.29%	14.29%	14.29%	7.14%	0.00%	14
Waste transfer sites	50.00%	14.29%	14.29%	14.29%	7.14%	0.00%	14

Feature	Average buffer size selected rounded to nearest 100 (m)
Solar farms	100
Wind farms	200
Transmission	200
Oil and Gas Processing	200
Mineral Extraction	200
Power plants	200
Waste transfer sites	200



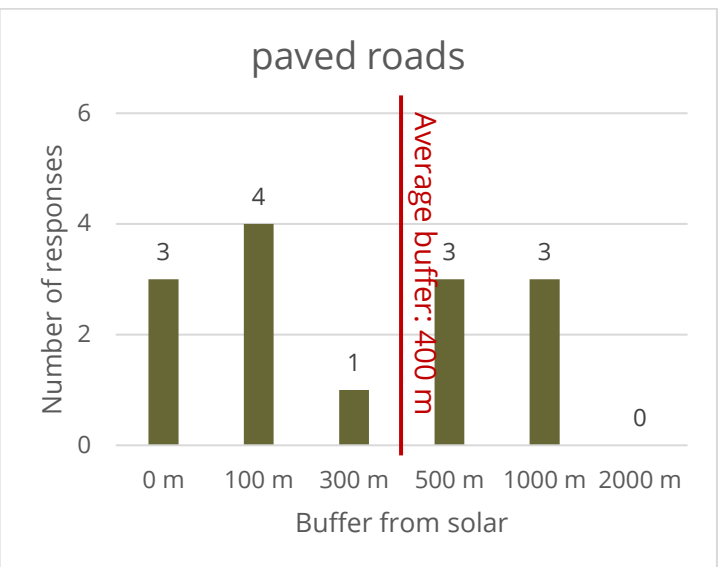
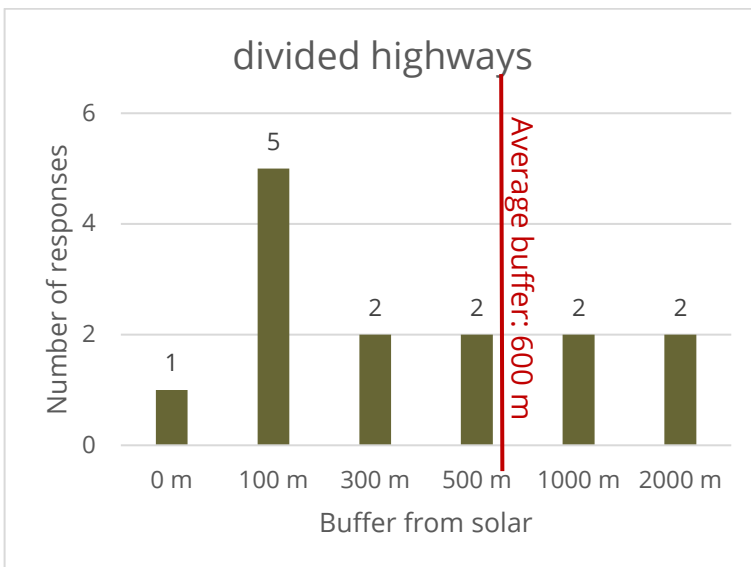


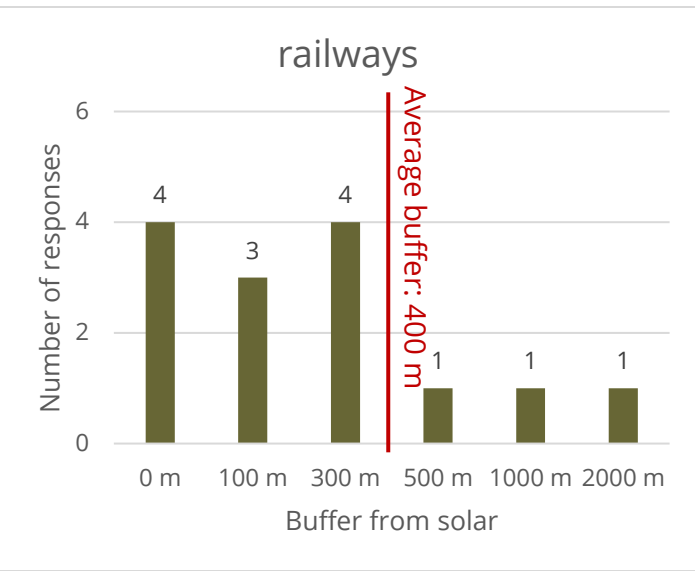
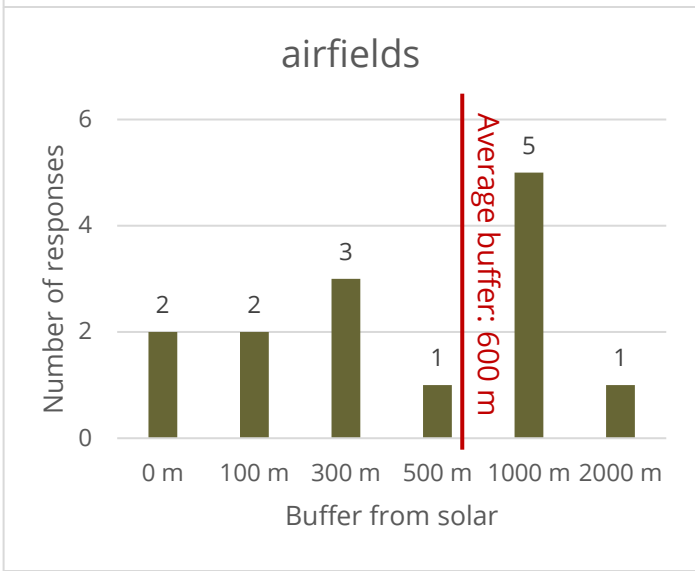
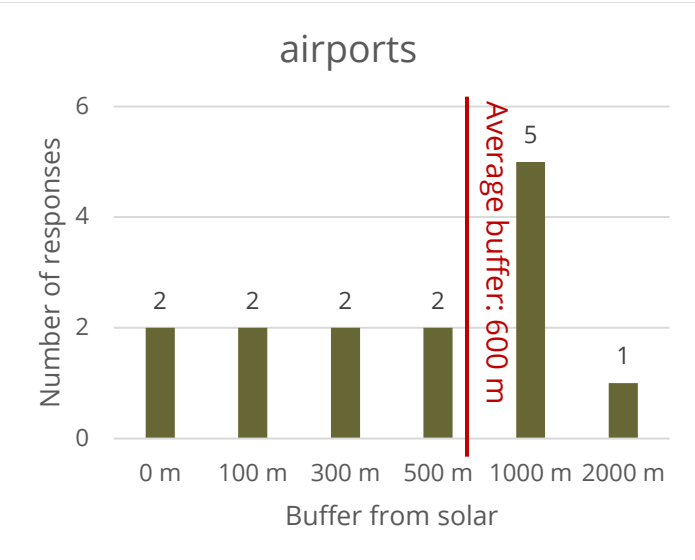
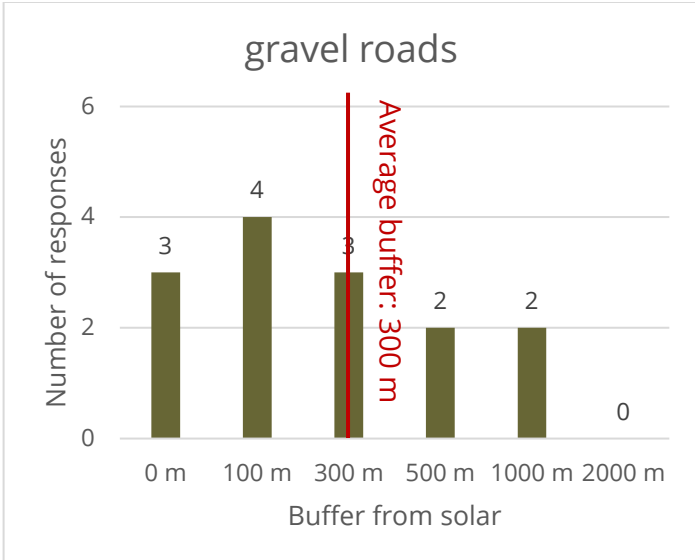
Buffer for transportation features

Please provide a buffer from **solar** development for the following transportation features. (0 m = no buffer)

	0 m	100 m	300 m	500 m	1000 m	2000 m	Total responses
divided highways	7.14%	35.71%	14.29%	14.29%	14.29%	14.29%	14
paved roads	21.43%	28.57%	7.14%	21.43%	21.43%	0.00%	14
gravel roads	21.43%	28.57%	21.43%	14.29%	14.29%	0.00%	14
airports	14.29%	14.29%	14.29%	14.29%	35.71%	7.14%	14
airfields	14.29%	14.29%	21.43%	7.14%	35.71%	7.14%	14
railways	28.57%	21.43%	28.57%	7.14%	7.14%	7.14%	14

Feature	Average buffer size selected rounded to nearest 100 (m)
divided highways	600
paved roads	400
gravel roads	300
airports	600
airfields	600
railways	400



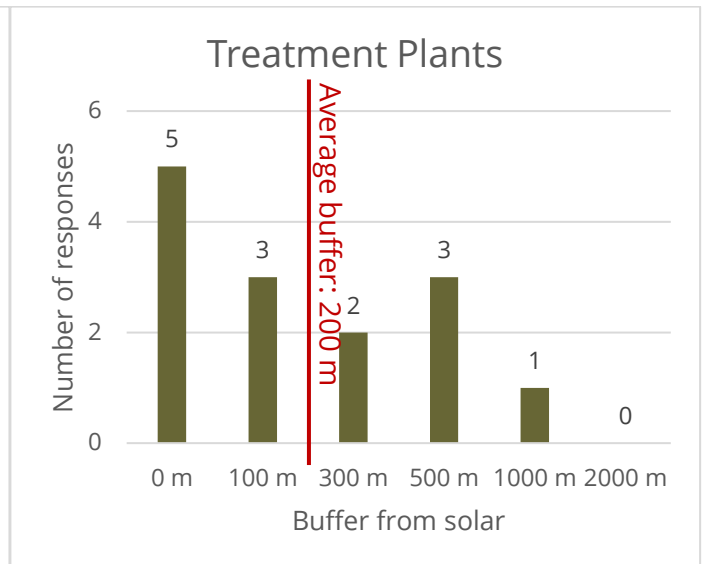
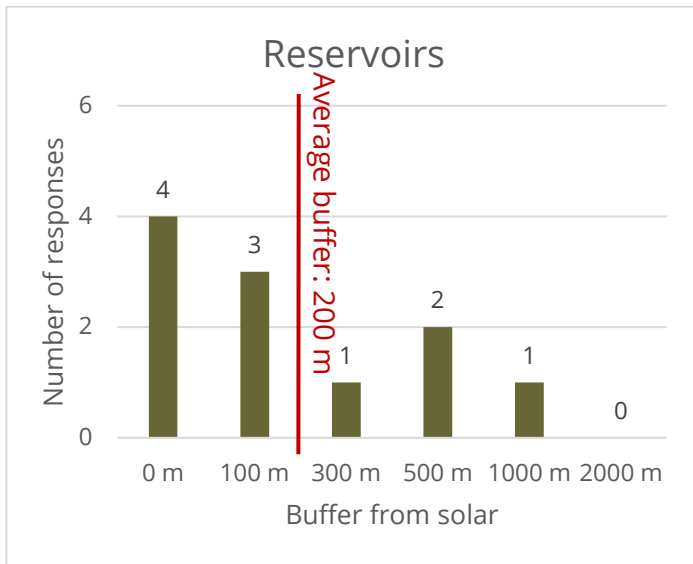


Buffer for water management features

Please provide a buffer from **solar** development for the following water management features. (0 m = no buffer)

	0 m	100 m	300 m	500 m	1000 m	2000 m	Total responses
Reservoirs	36.36%	27.27%	9.09%	18.18%	9.09%	0.00%	11
Treatment Plants	35.71%	21.43%	14.29%	21.43%	7.14%	0.00%	14

Feature	Average buffer size selected rounded to nearest 100 (m)
Reservoirs	200
Treatment Plants	200



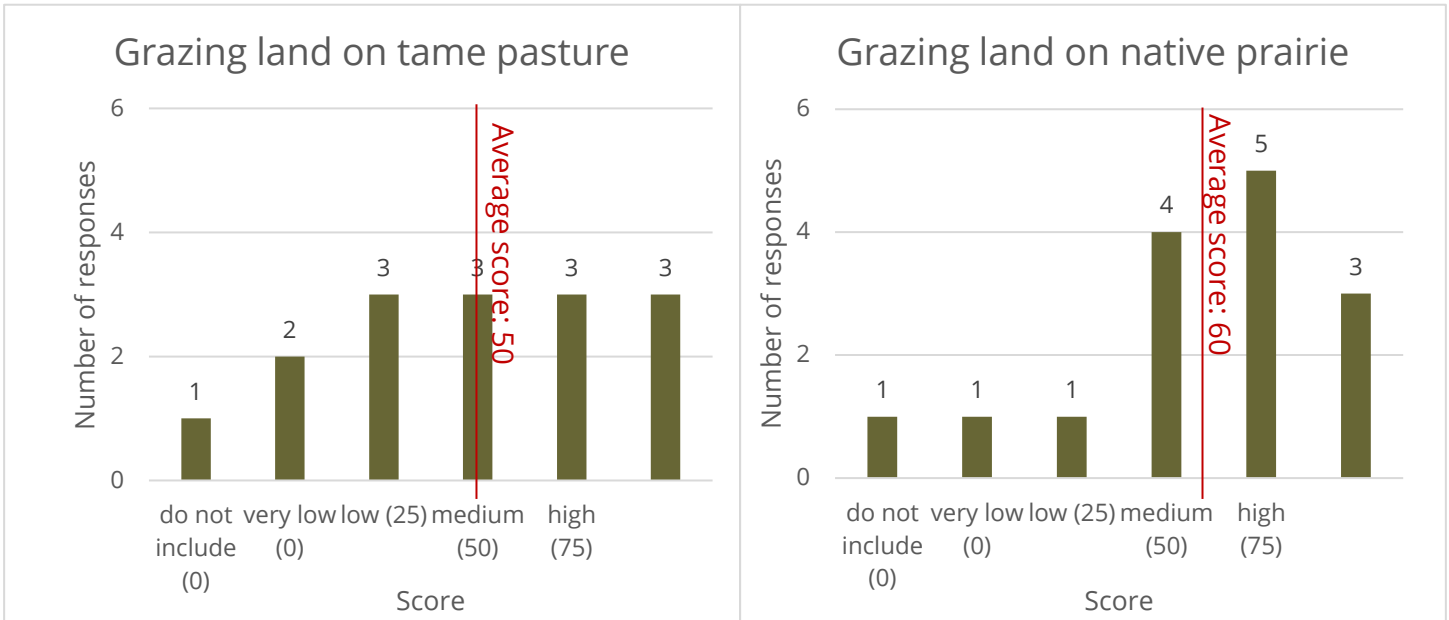
Wind Survey Results

Wind - Agricultural theme area

Grazing lands

Please score grazing lands in terms of their value to the agriculture theme and in relation to the impact from **wind** development:

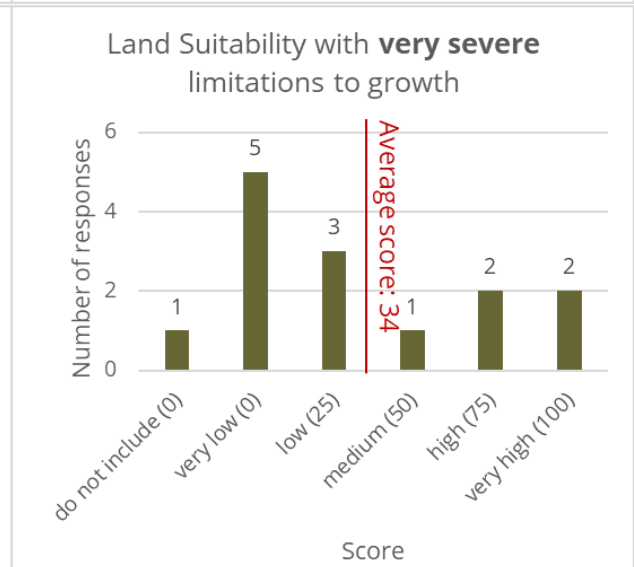
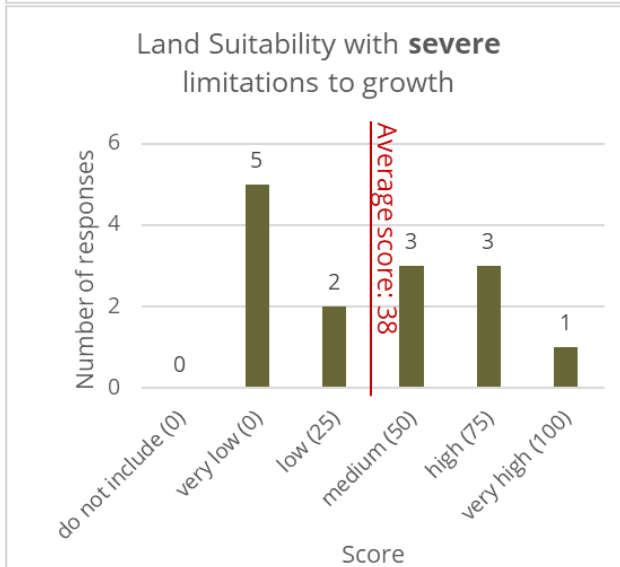
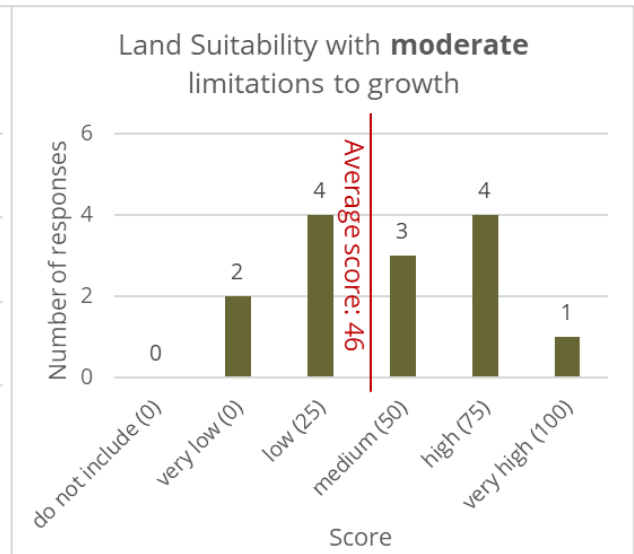
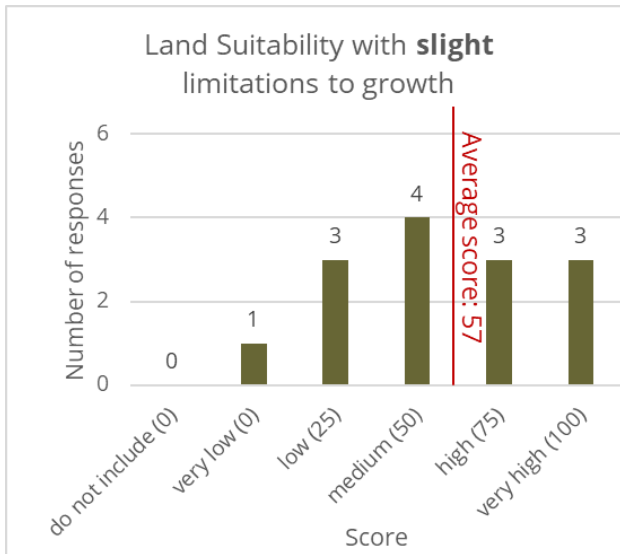
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Grazing land on native prairie	6.67%	6.67%	6.67%	26.67%	33.33%	20.00%	15
Grazing land on tame pasture	6.67%	13.33%	20.00%	20.00%	20.00%	20.00%	15



Land Suitability Rating Classes

Plleasescore Land Suitability Rating Classes (LSRC) in terms of their value to the agriculture theme and in relation to the impact from **wind** development (LSRC will be used to identify high value for growing crops):

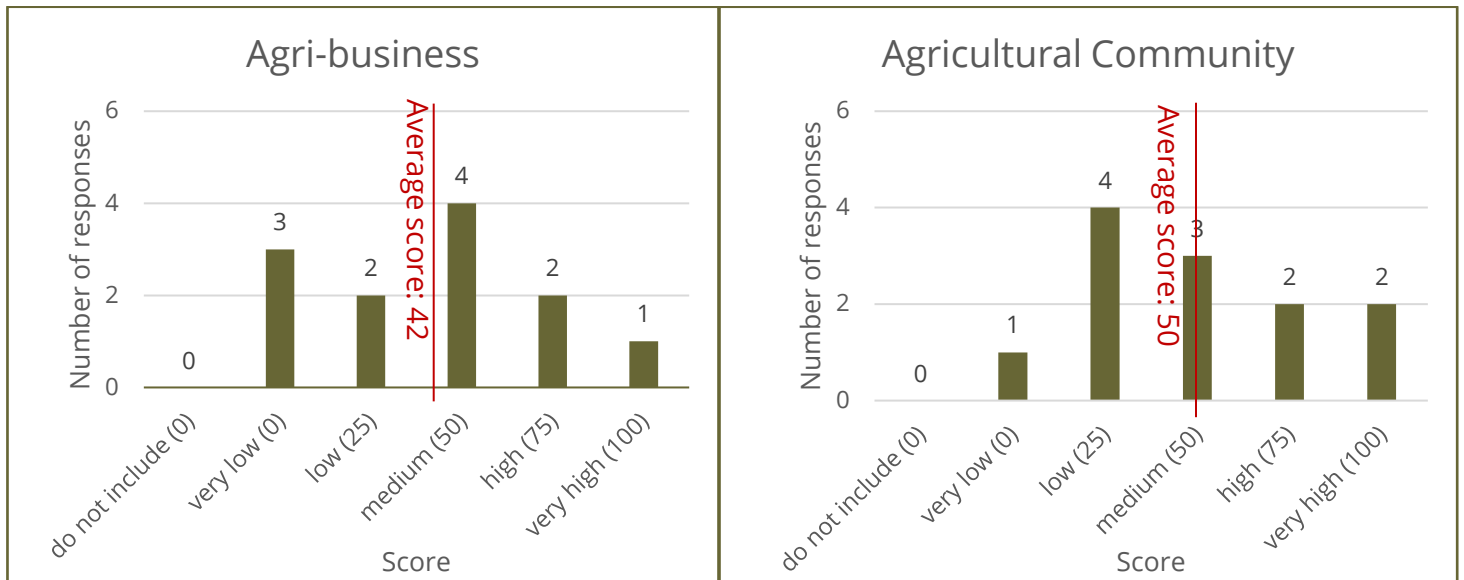
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Land Suitability with slight limitations to growth	0.00%	7.14%	21.43%	28.57%	21.43%	21.43%	14
Land Suitability with moderate limitations to growth	0.00%	14.29%	28.57%	21.43%	28.57%	7.14%	14
Land Suitability with severe limitations to growth	0.00%	35.71%	14.29%	21.43%	21.43%	7.14%	14
Land Suitability with very severe limitations to growth	7.14%	35.71%	21.43%	7.14%	14.29%	14.29%	14



Agri-business

Please score Agri-business (auction marts, feedlots, seed cleaning plants, etc.) and Agricultural Community (ag society buildings, race tracks, etc.) in terms of their value to the agriculture theme and in relation to the impact from **wind** development:

	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Agri-business	0.00%	25.00%	16.67%	33.33%	16.67%	8.33%	12
Agricultural Community	0.00%	8.33%	33.33%	25.00%	16.67%	16.67%	12



Wind - Ecological theme area

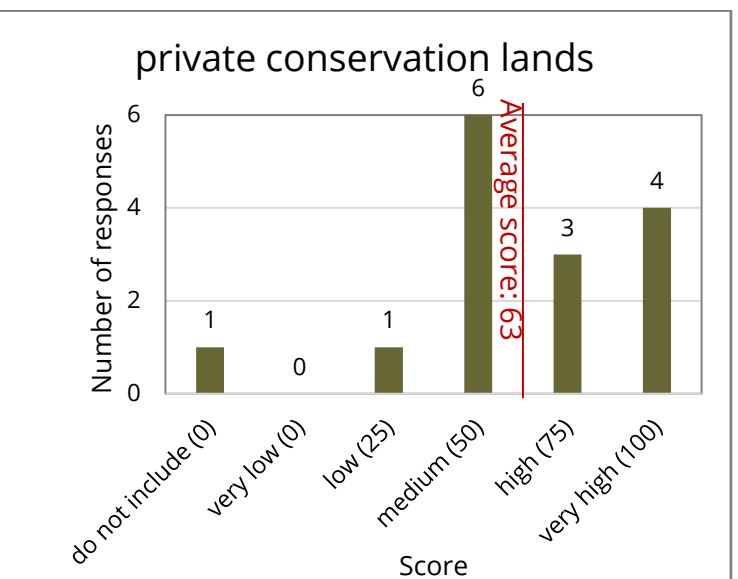
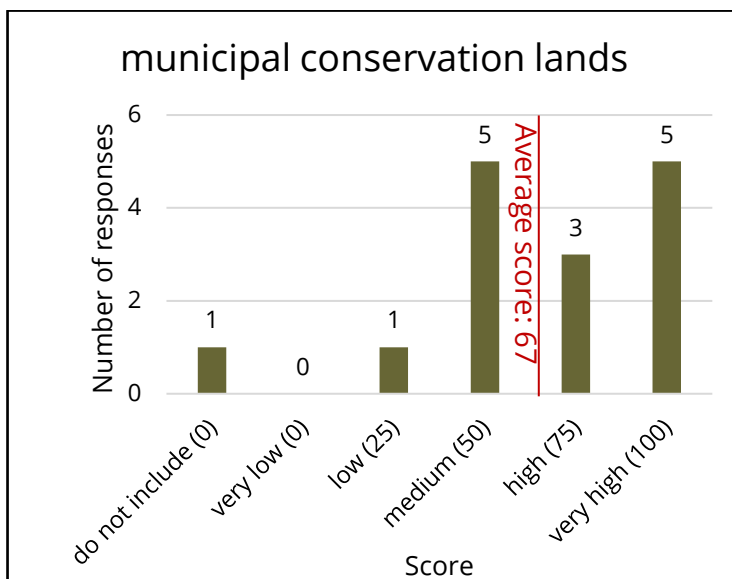
No-go areas:

- Provincial and national protected areas
- Private conservation lands (SALTS and NCC have no wind and solar policy on easements and owned land)
- Within 800 m from trumpeter swan waterbodies and watercourses (AEP Wildlife Directives for Wind and Solar Development)
- Within 200 m from piping plover waterbody (AEP Wildlife Directives for Wind and Solar Development)
- Within 100 m from top of valley breaks (including coulees)
- Within 100 m of large permanent water bodies (AEP Wildlife Directive for Solar Development)
- Within 45 m of small permanent waterbodies and intermittent watercourses or springs (AEP Wildlife Directive for Solar Development)
- Within 1000 m of named lakes (AEP Wildlife Directives for Wind and Solar Development)
- Within 100 m of wetlands classed as bog, fen, marsh, shallow open water and swamp (Water Act, Wetland Policy, SSRP, AEP Wildlife Directives for Wind and Solar)

Conservation lands

Please score conservation lands (Municipal and environmental reserves) in terms of their value to the ecological theme and in relation to the impact from **wind** development:

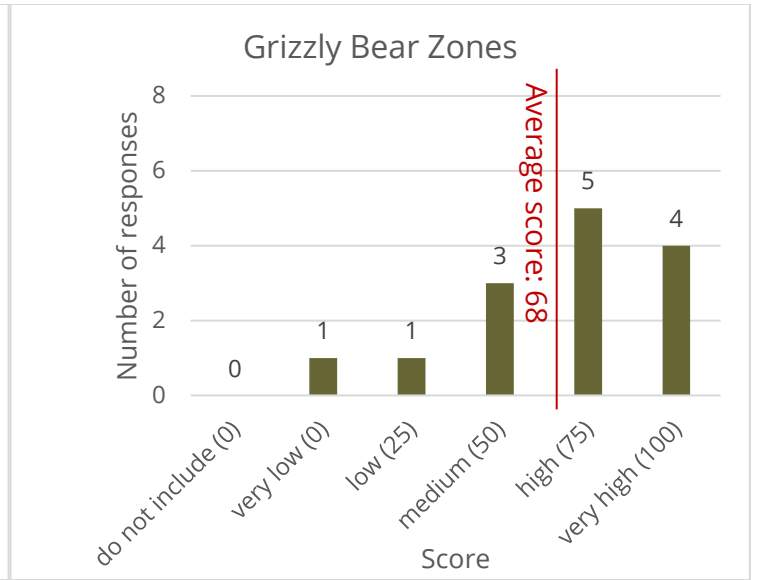
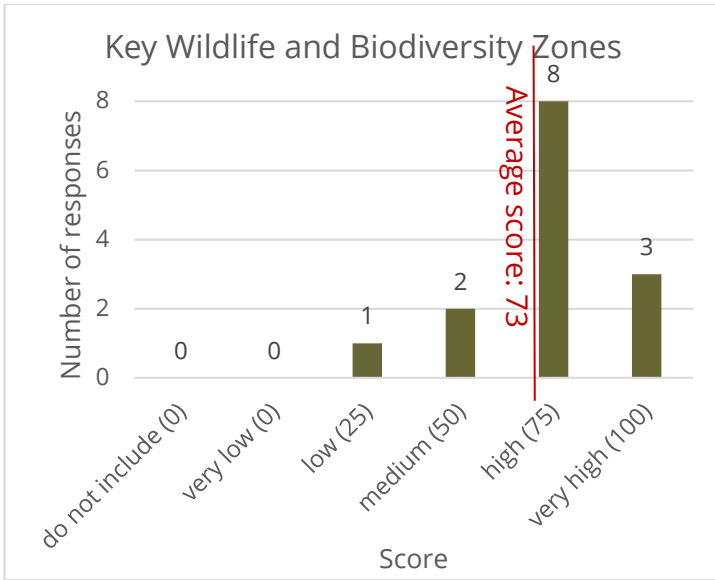
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
municipal conservation lands	6.67%	0.00%	6.67%	33.33%	20.00%	33.33%	15
private conservation lands	6.67%	0.00%	6.67%	40.00%	20.00%	26.67%	15



Species management areas or designations

Please score the following species management areas or designations in terms of their value to the ecological theme and in relation to the impact from **wind** development:

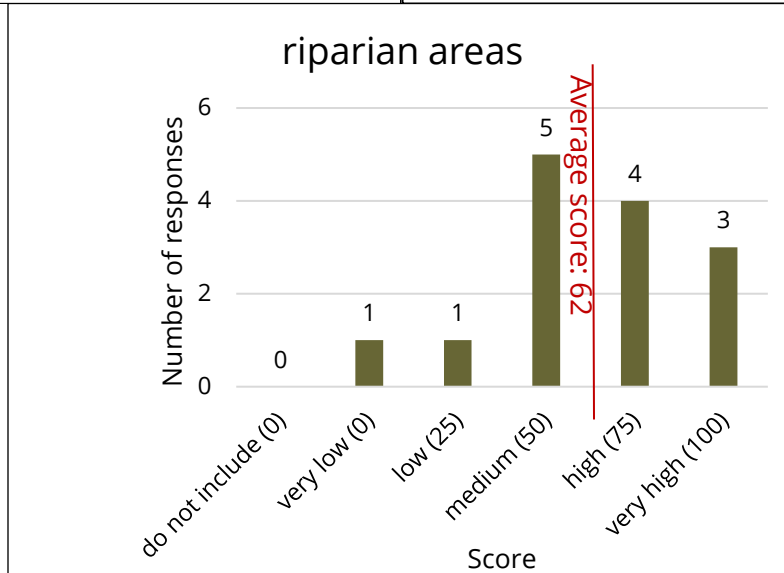
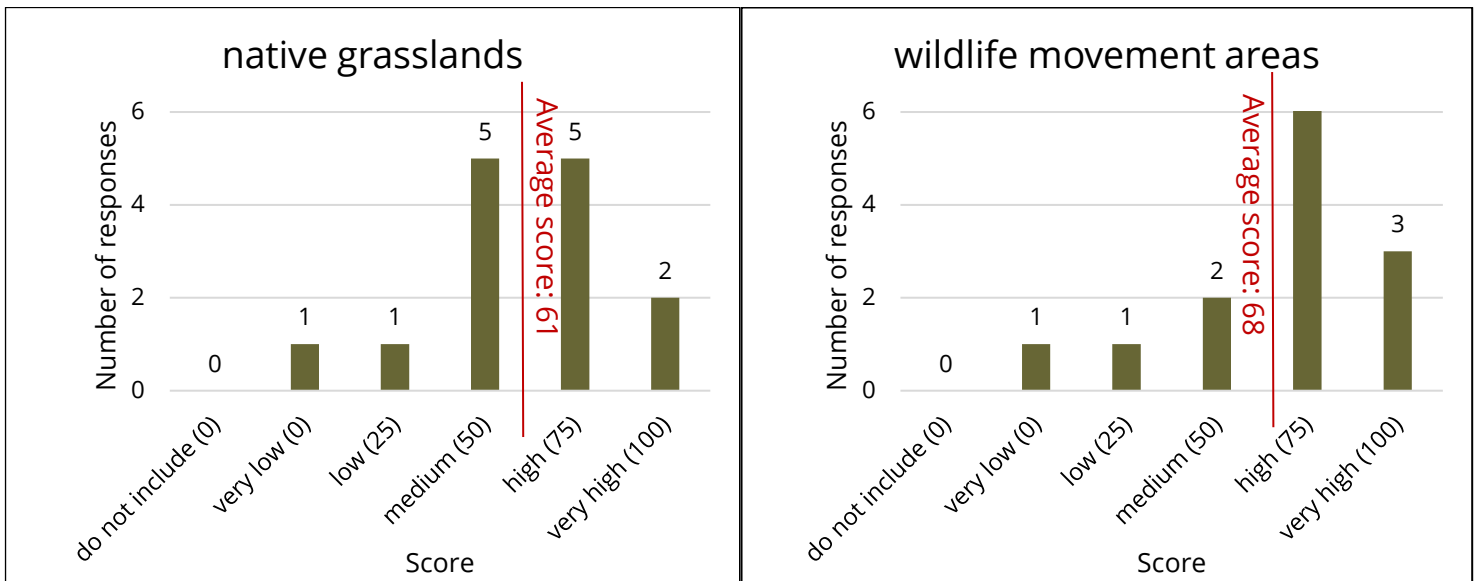
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Key Wildlife and Biodiversity Zones	0.00%	0.00%	7.14%	14.29%	57.14%	21.43%	14
Grizzly Bear Zones	0.00%	7.14%	7.14%	21.43%	35.71%	28.57%	14



Important wildlife habitat or vegetation areas

Please score the following important wildlife habitat or vegetation areas in terms of their value to the ecological theme and in relation to the impact from **wind** development:

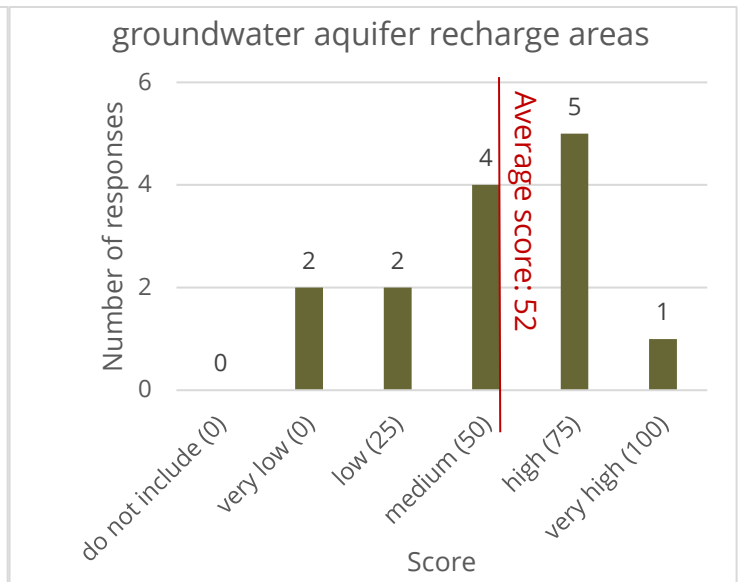
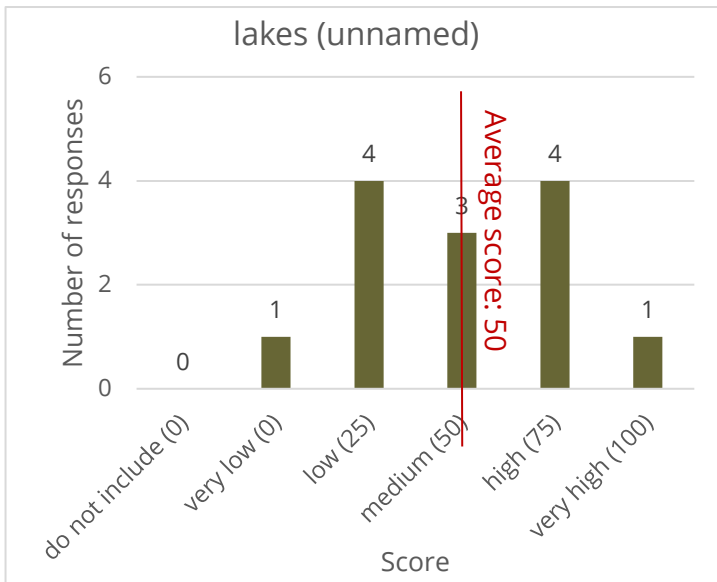
	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
native grasslands	0.00%	7.14%	7.14%	35.71%	35.71%	14.29%	14
wildlife movement areas	0.00%	7.14%	7.14%	14.29%	50.00%	21.43%	14
riparian areas	0.00%	7.14%	7.14%	35.71%	28.57%	21.43%	14



Waterways and water-bodies

Please score the following waterways and water-bodies in terms of their value to the ecological theme and in relation to the impact from **wind** development:

	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
lakes (unnamed)	0.00%	7.69%	30.77%	23.08%	30.77%	7.69%	13
groundwater aquifer recharge areas	0.00%	14.29%	14.29%	28.57%	35.71%	7.14%	14



Wind - Cultural theme area

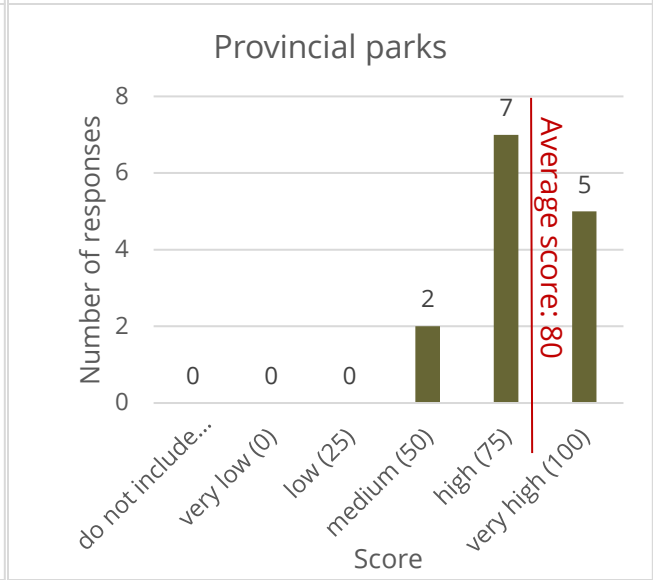
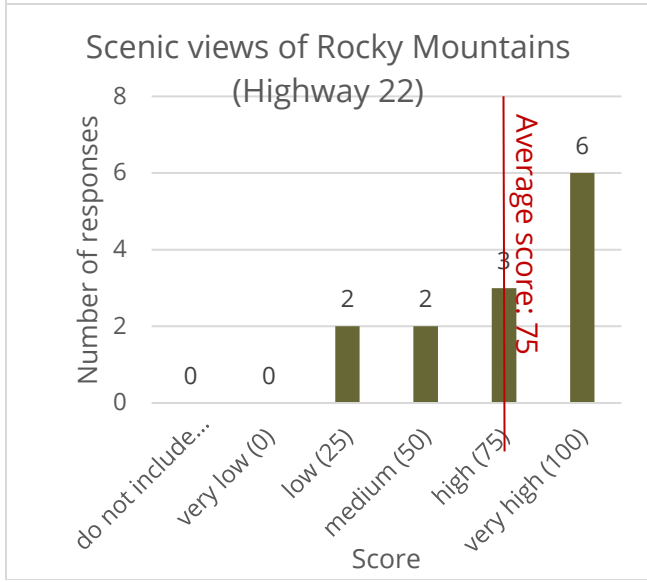
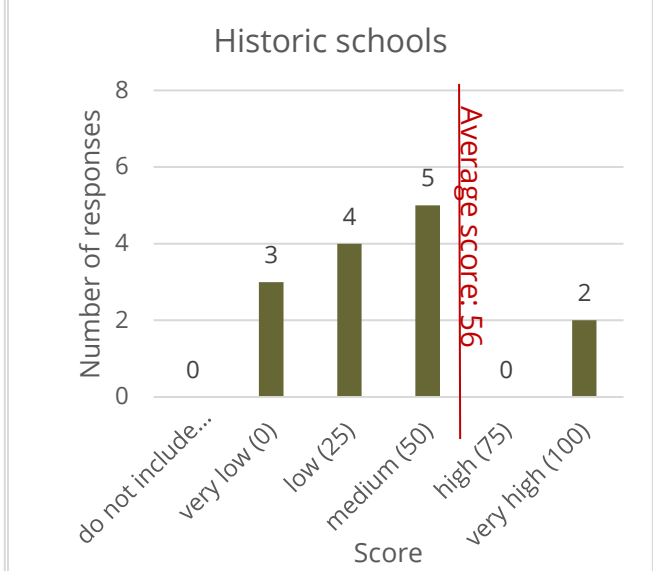
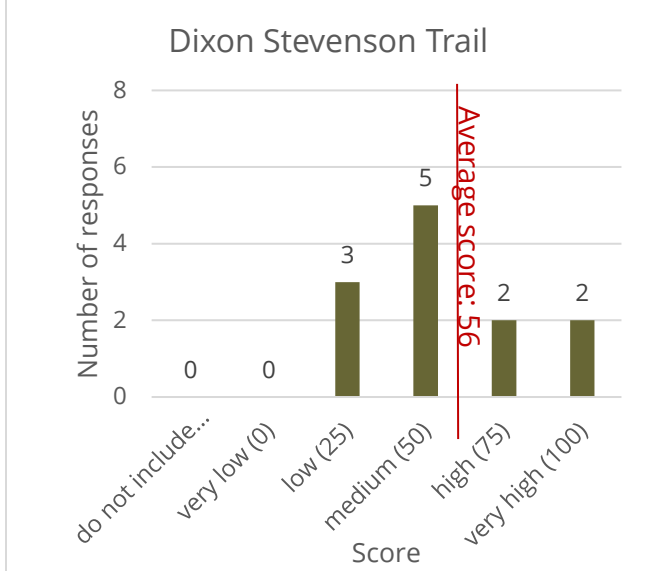
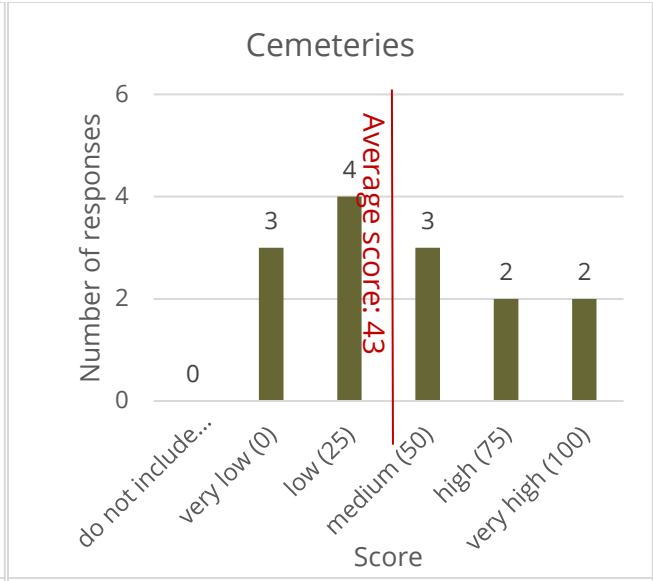
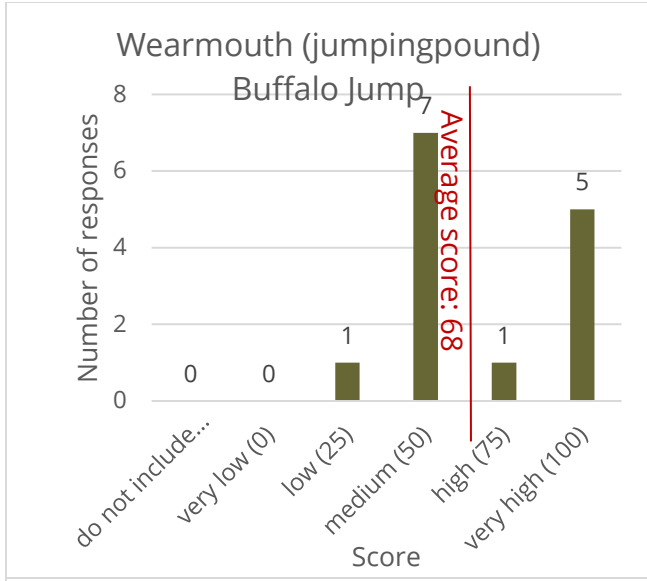
No-go areas:

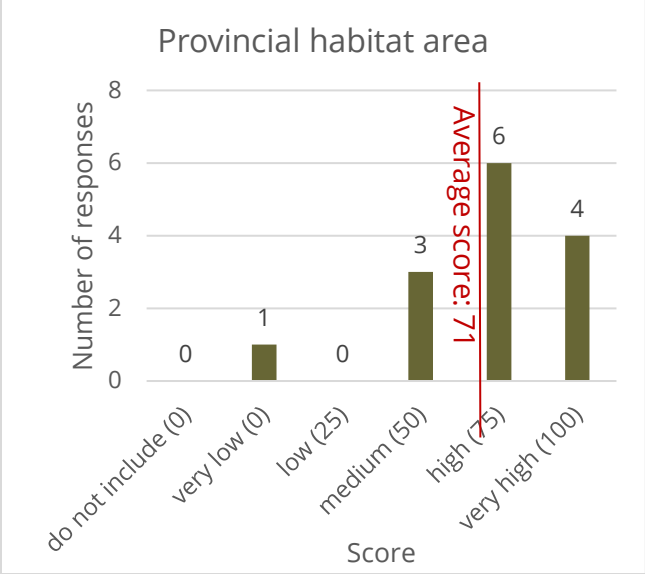
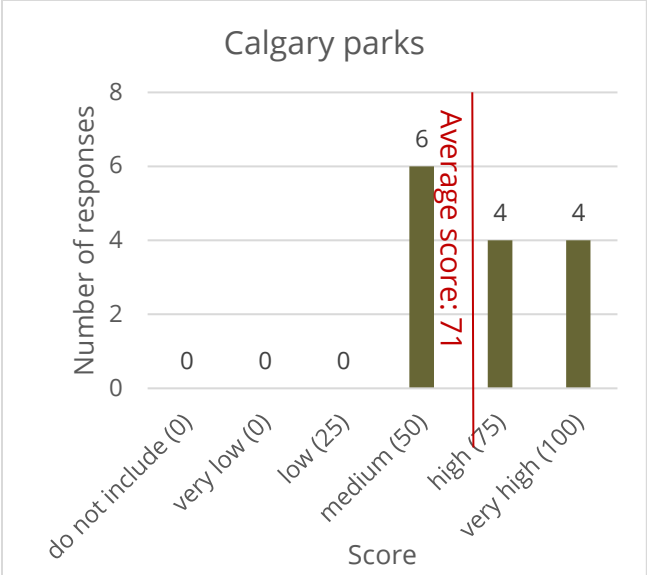
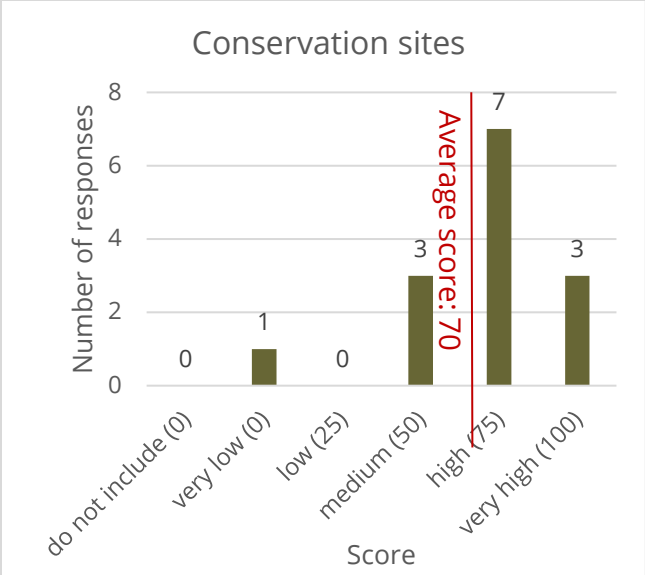
- Historic Resource Value (HRV) 1 and 2 (Ab Culture and Tourism)

Cultural features

The following features were identified as important cultural features by Rocky View County Municipal Land Use Suitability Tool participants. Please score each feature in terms of value to the cultural theme and in relation to impacts from **wind** development.

	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
Wearmouth (jumpingpound) Buffalo Jump	0.00%	0.00%	7.14%	50.00%	7.14%	35.71%	14
Cemeteries	0.00%	21.43%	28.57%	21.43%	14.29%	14.29%	14
Dixon Stevenson Trail	0.00%	0.00%	25.00%	41.67%	16.67%	16.67%	12
Historic schools	0.00%	21.43%	28.57%	35.71%	0.00%	14.29%	14
Scenic views of Rocky Mountains (east of Highway 22)	0.00%	0.00%	15.38%	15.38%	23.08%	46.15%	13
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	0.00%	0.00%	0.00%	14.29%	50.00%	35.71%	14
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	0.00%	7.14%	0.00%	21.43%	50.00%	21.43%	14
Calgary Parks (Haskayne, Bearspaw)	0.00%	0.00%	0.00%	42.86%	28.57%	28.57%	14
Provincial habitat area (Perrenoud Wildlife Habitat Area)	0.00%	7.14%	0.00%	21.43%	42.86%	28.57%	14



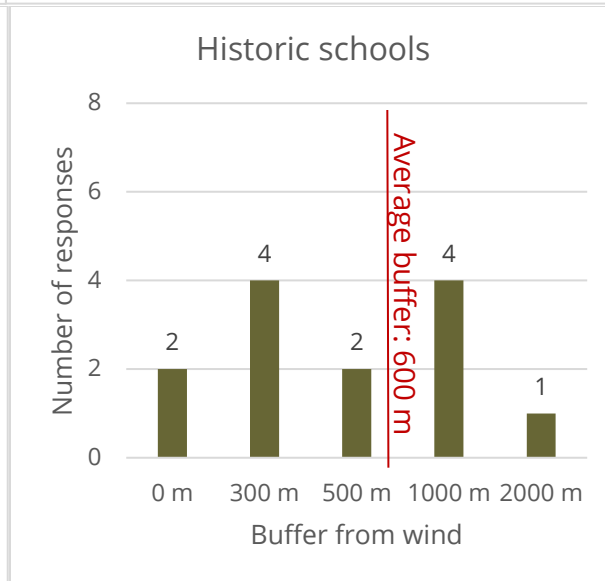
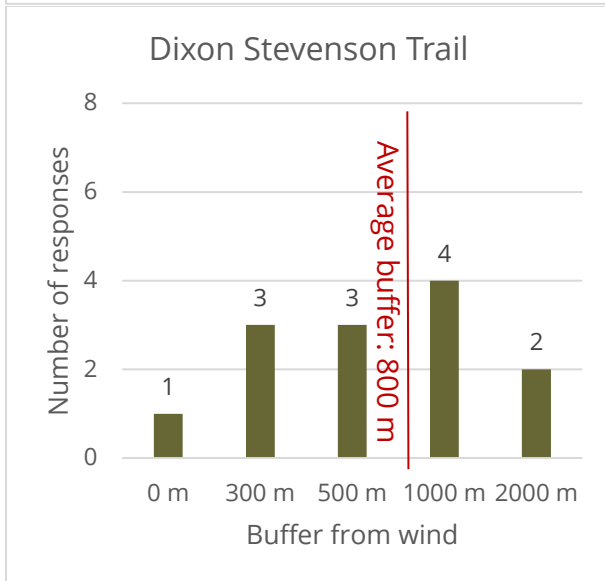
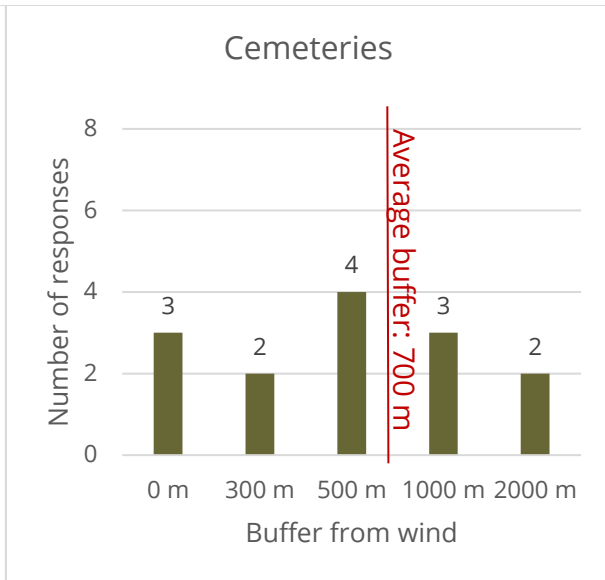
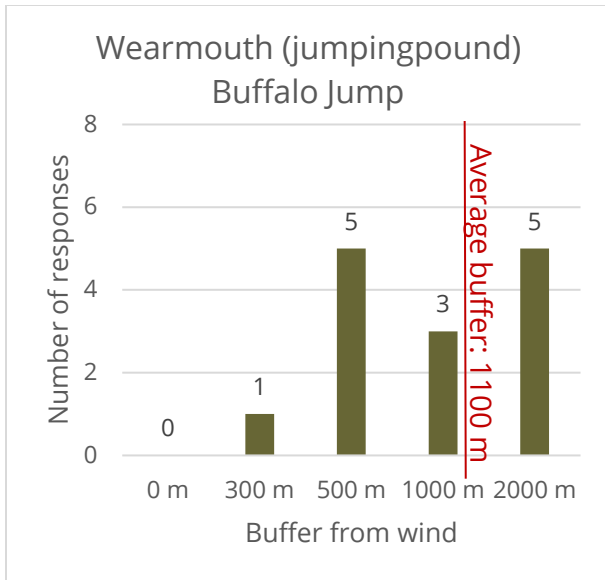


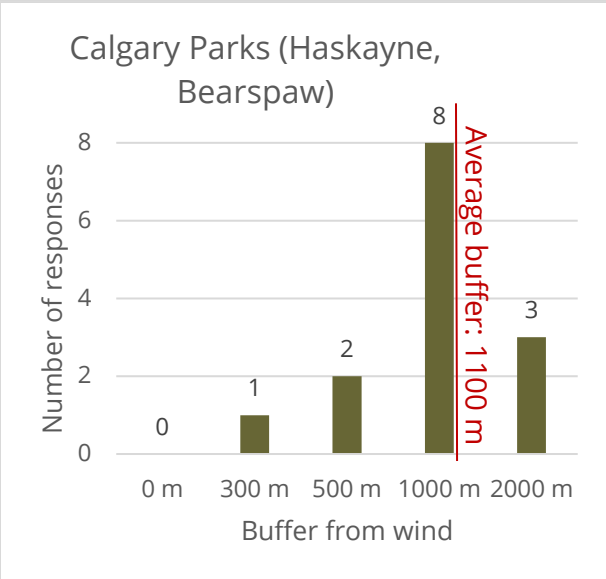
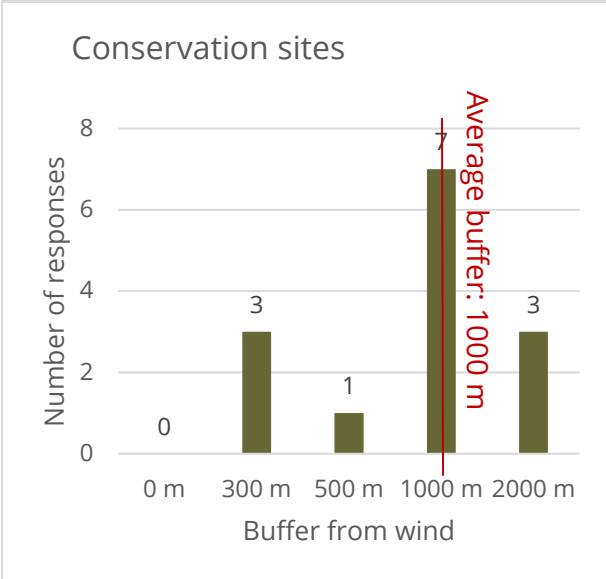
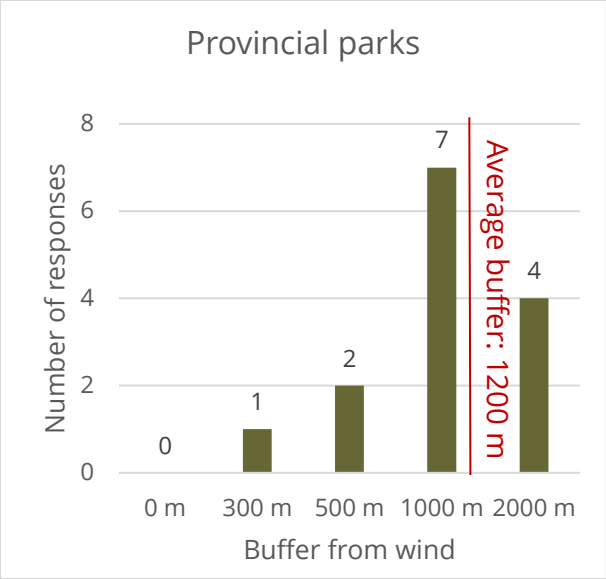
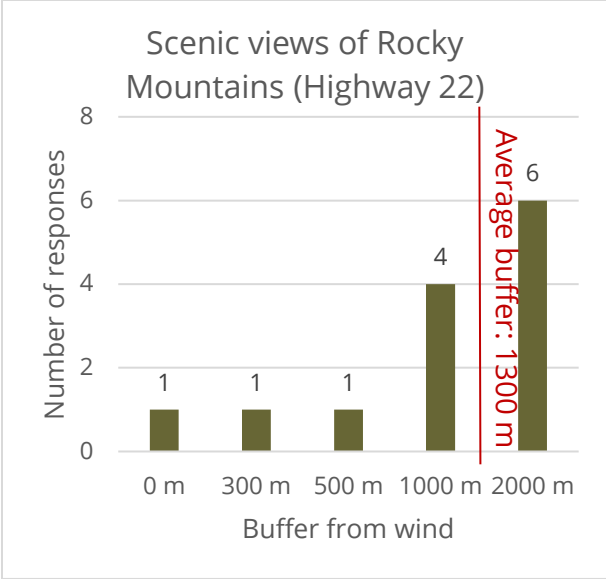
Buffers from cultural features

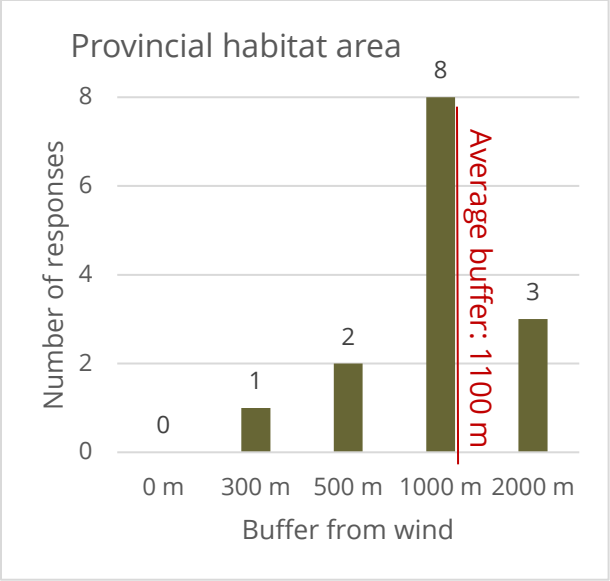
Please select a buffer from **wind** development for the following cultural features. (0m = no buffer)

	0 m	300 m	500 m	1000 m	2000 m	Total
Wearmouth (jumpingpound) Buffalo Jump	0.00%	7.14%	35.71%	21.43%	35.71%	14
Cemeteries	21.43%	14.29%	28.57%	21.43%	14.29%	14
Dixon Stevenson Trail	7.69%	23.08%	23.08%	30.77%	15.38%	13
Historic schools	15.38%	30.77%	15.38%	30.77%	7.69%	13
Scenic views of Rocky Mountains (east of Highway 22)	7.69%	7.69%	7.69%	30.77%	46.15%	13
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	0.00%	7.14%	14.29%	50.00%	28.57%	14
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	0.00%	21.43%	7.14%	50.00%	21.43%	14
Calgary Parks (Haskayne, Bearspaw)	0.00%	7.14%	14.29%	57.14%	21.43%	14
Provincial habitat area (Perrenoud Wildlife Habitat Area)	0.00%	7.14%	14.29%	57.14%	21.43%	14

Cultural feature	Average buffer size selected rounded to nearest 100 (m)
Wearmouth (jumpingpound) Buffalo Jump	1100
Cemeteries	700
Dixon Stevenson Trail	800
Historic schools	600
Scenic views of Rocky Mountains (east of Highway 22)	1300
Provincial Parks (Big Hill Springs, Bragg Creek, Glenbow Ranch)	1200
Conservation sites (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	1000
Calgary Parks (Haskayne, Bearspaw)	1100
Provincial habitat area (Perrenoud Wildlife Habitat Area)	1100



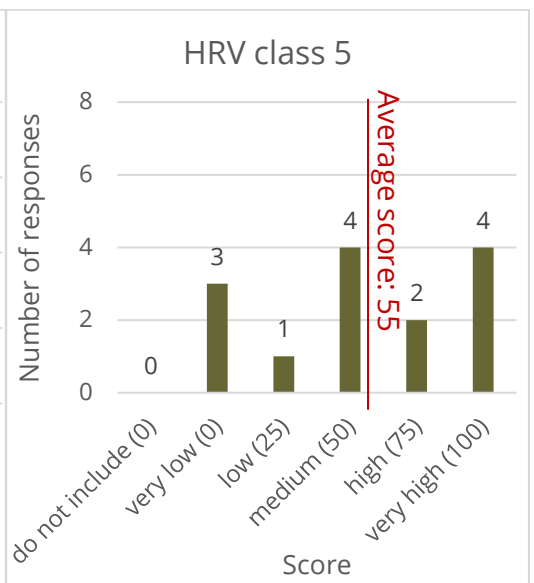
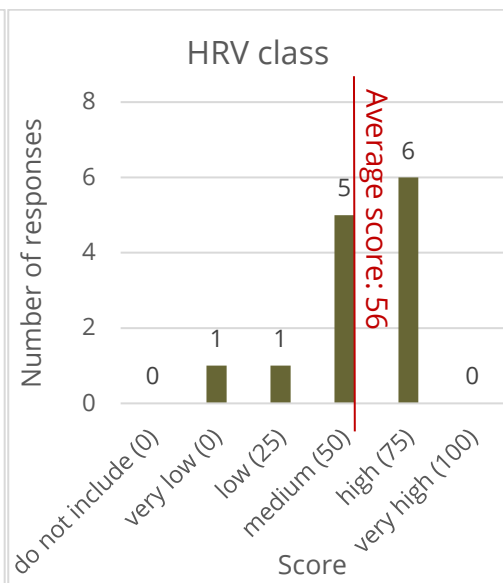
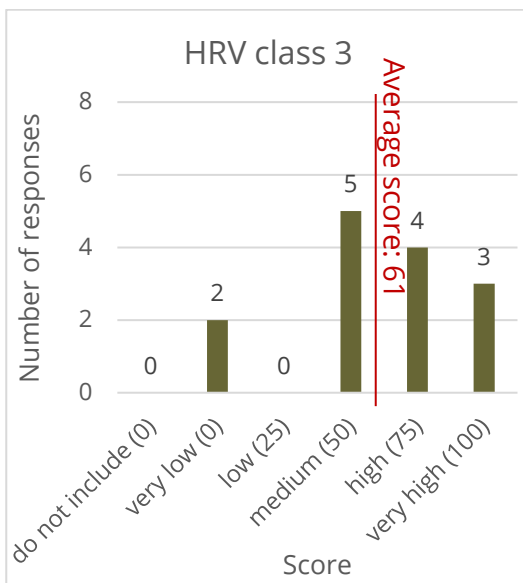




Historic Resource Values (HRV) layer

Historic Resource Values (HRV) layer is provided by GOA to help developers, industry representatives, and regulators determine if a proposed development might affect historic resources. There are five classes, HRV class 1 and 2 are regulated as no-go and you are not asked to score them. Please score HRV class 3 to 5 based on their value to the cultural theme and in relation to the impact from **wind** development:

	do not include (0)	very low (0)	low (25)	medium (50)	high (75)	very high (100)	Total responses
HRV class 3: contains a significant historic resource that will likely require avoidance	0.00%	14.29%	0.00%	35.71%	28.57%	21.43%	14
HRV class 4: contains a historic resource that may require avoidance	0.00%	7.69%	7.69%	38.46%	46.15%	0.00%	13
HRV class 5: high potential to contain a historic resource	0.00%	21.43%	7.14%	28.57%	14.29%	28.57%	14



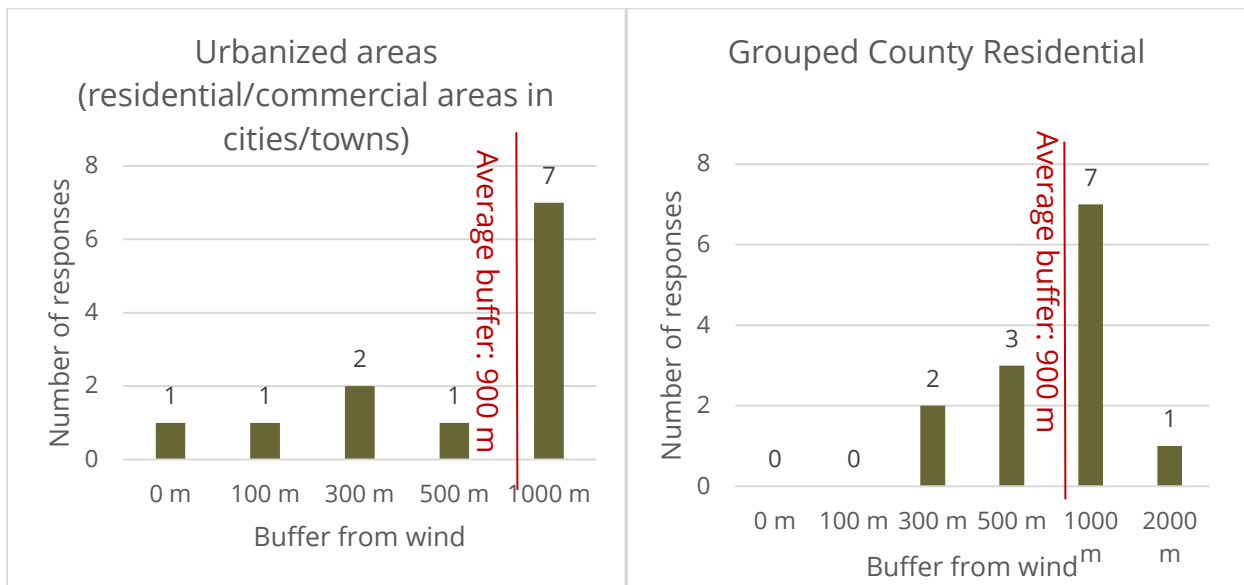
Wind - Infrastructure and settlement theme area

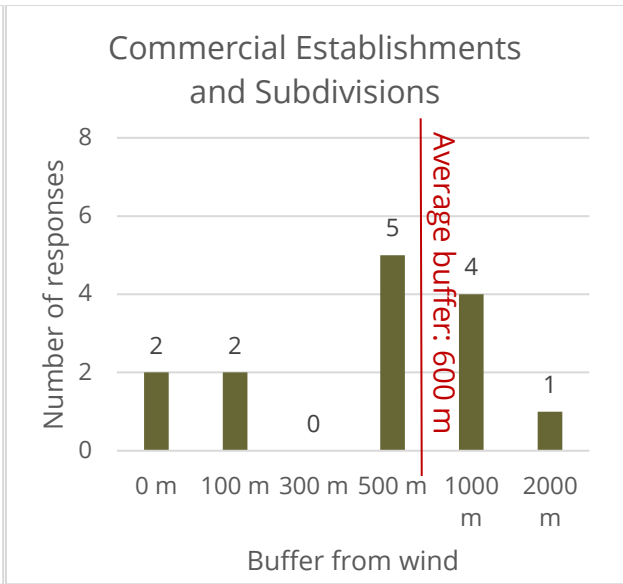
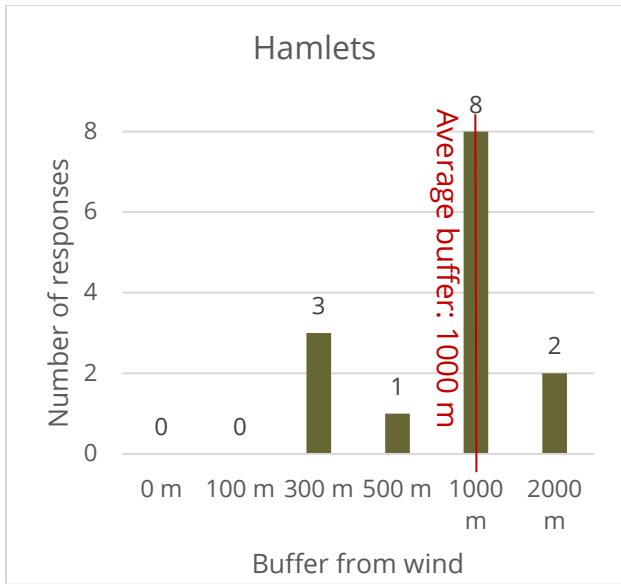
Buffers for urbanized areas, rural residential and rural commercial features (non-agriculture)

Please provide a buffer from **wind** development for the following urbanized areas, rural residential and rural commercial non-agriculture features (0 m = no buffer).

	0 m	100 m	300 m	500 m	1000 m	2000 m	Total responses
Urbanized areas (residential/commercial areas in cities/towns)	7.14%	7.14%	14.29%	7.14%	50.00%	14.29%	14
Grouped County Residential	0.00%	0.00%	15.38%	23.08%	53.85%	7.69%	13
Hamlets	0.00%	0.00%	21.43%	7.14%	57.14%	14.29%	14
Commercial Establishments and Subdivisions	14.29%	14.29%	0.00%	35.71%	28.57%	7.14%	14

	Average buffer size selected rounded to nearest 100 (m)
Urbanized areas (residential/commercial areas in cities/towns)	900
Grouped County Residential	900
Hamlets	1000
Commercial Establishments and Subdivisions	600



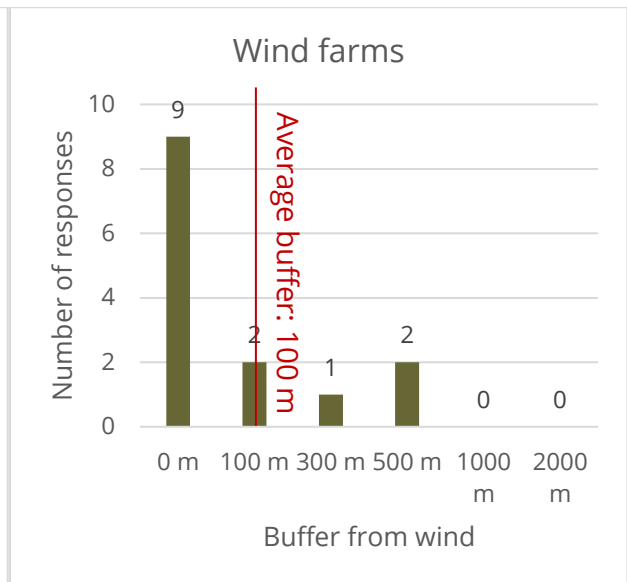
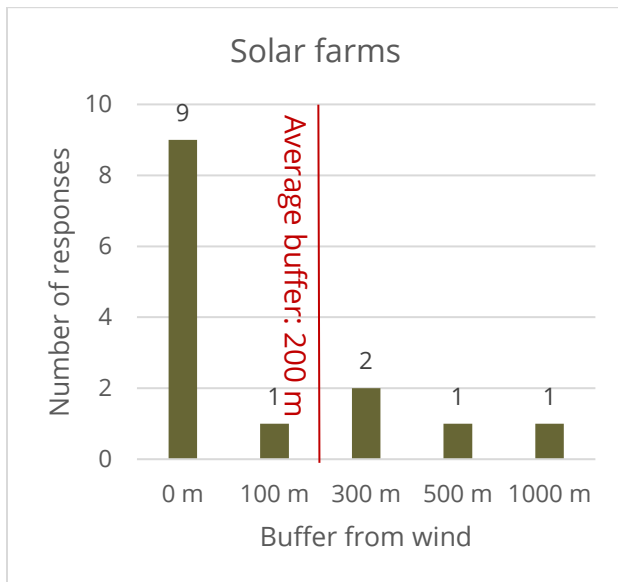


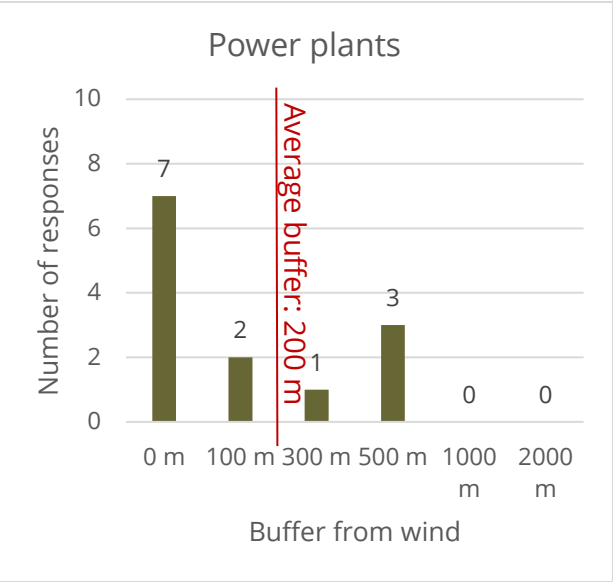
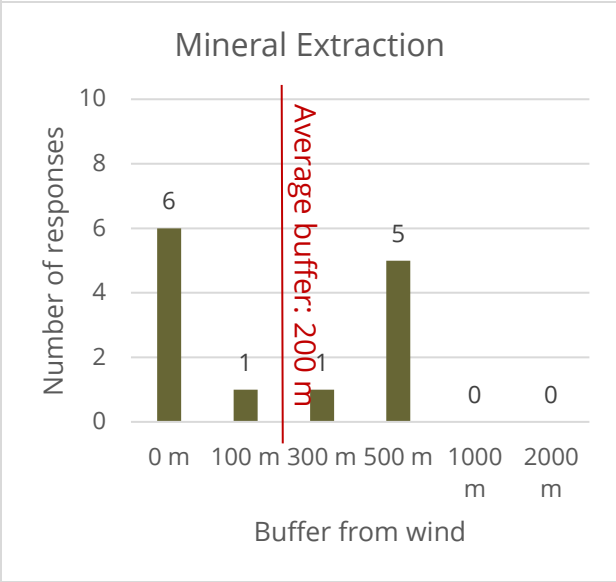
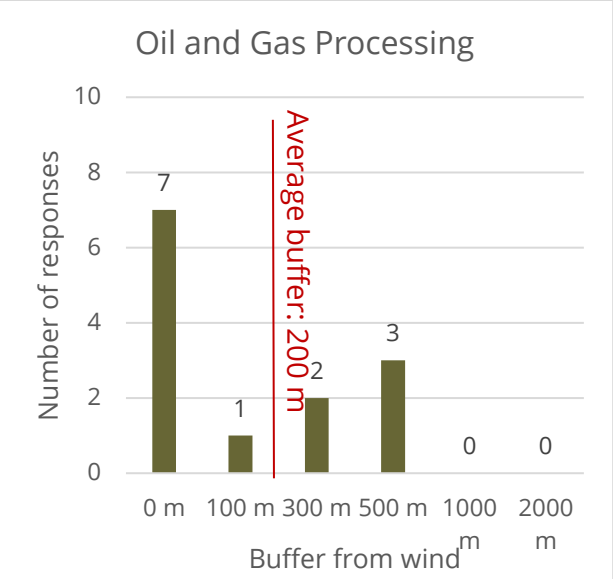
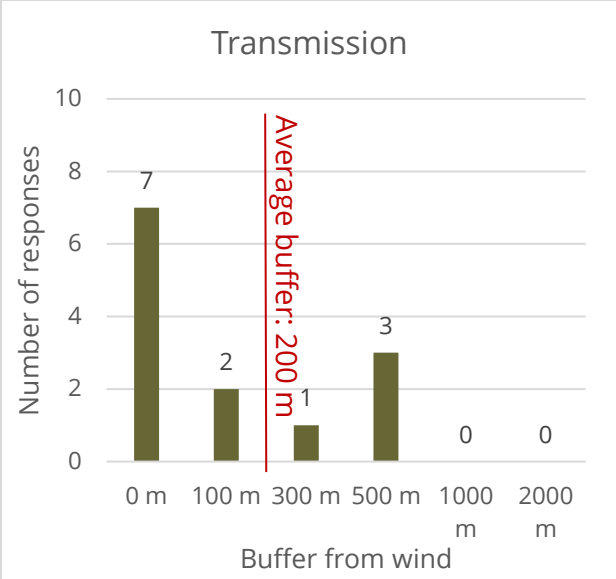
Buffers for rural industrial features (non-agriculture)

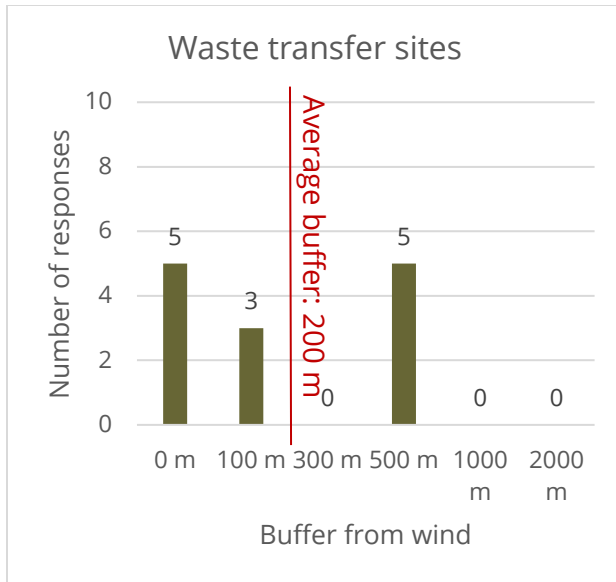
Please provide a buffer from **wind** development for the following rural industrial features non-agriculture (0 m = no buffer).

	0 m	100 m	300 m	500 m	1000 m	2000 m	Total responses
Solar farms	64.29%	7.14%	14.29%	7.14%	7.14%	0.00%	14
Wind farms	64.29%	14.29%	7.14%	14.29%	0.00%	0.00%	14
Transmission	53.85%	15.38%	7.69%	23.08%	0.00%	0.00%	13
Oil and Gas Processing	53.85%	7.69%	15.38%	23.08%	0.00%	0.00%	13
Mineral Extraction	46.15%	7.69%	7.69%	38.46%	0.00%	0.00%	13
Power plants	53.85%	15.38%	7.69%	23.08%	0.00%	0.00%	13
Waste transfer sites	38.46%	23.08%	0.00%	38.46%	0.00%	0.00%	13

	Average buffer size selected rounded to the nearest 100 (m)
Solar farms	200
Wind farms	100
Transmission	200
Oil and Gas Processing	200
Mineral Extraction	200
Power plants	200
Waste transfer sites	200





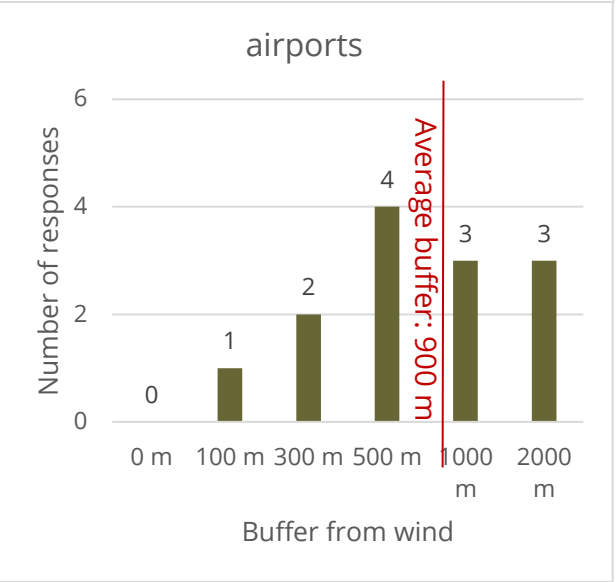
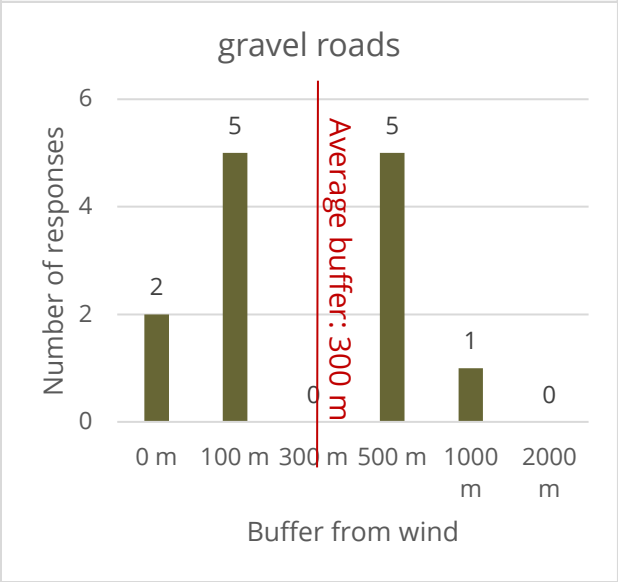
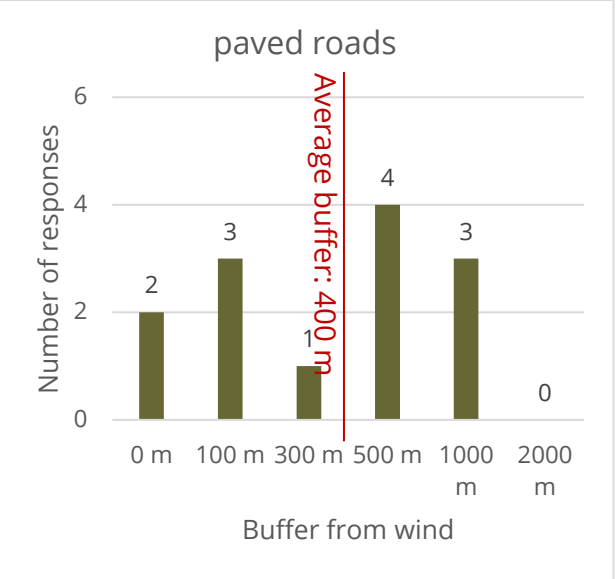
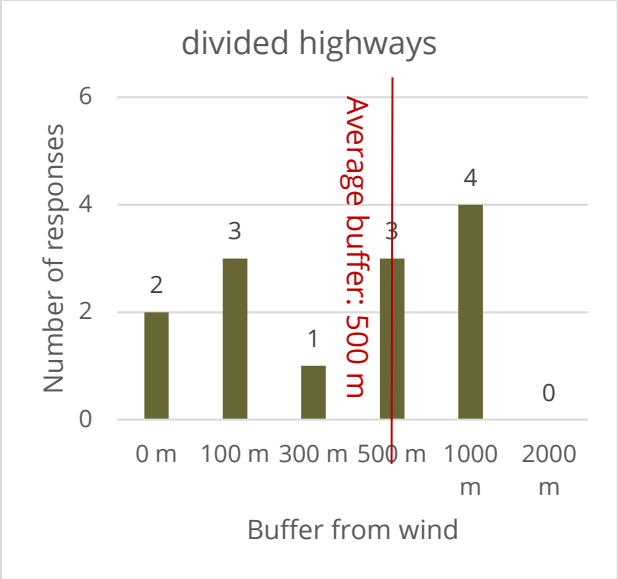


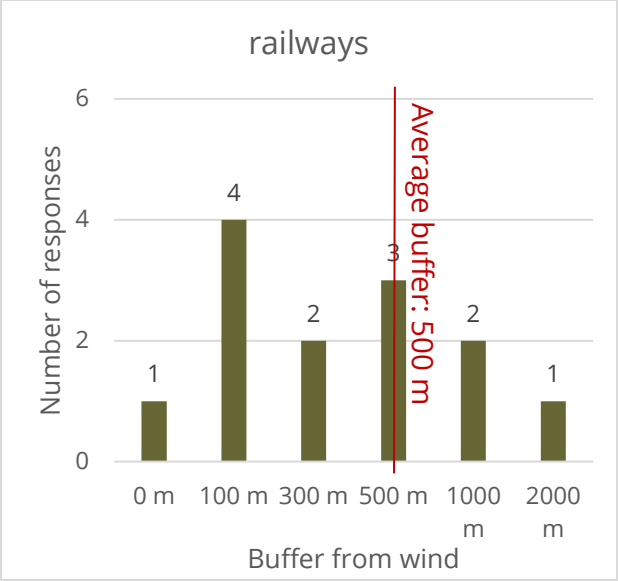
Buffers for transportation features

Please provide a buffer from **wind** development for the following transportation features (0 m = no buffer).

	0 m	100 m	300 m	500 m	1000 m	2000 m	Total
divided highways	15.38%	23.08%	7.69%	23.08%	30.77%	0.00%	13
paved roads	15.38%	23.08%	7.69%	30.77%	23.08%	0.00%	13
gravel roads	15.38%	38.46%	0.00%	38.46%	7.69%	0.00%	13
airports	0.00%	7.69%	15.38%	30.77%	23.08%	23.08%	13
airfields	0.00%	7.69%	15.38%	30.77%	23.08%	23.08%	13
railways	7.69%	30.77%	15.38%	23.08%	15.38%	7.69%	13

	Average buffer size selected rounded to the nearest 100 (m)
divided highways	500
paved roads	400
gravel roads	300
airports	900
airfields	900
railways	500



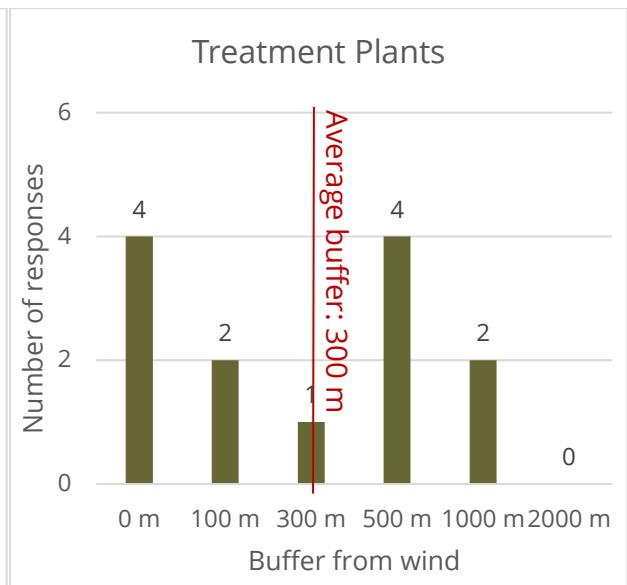
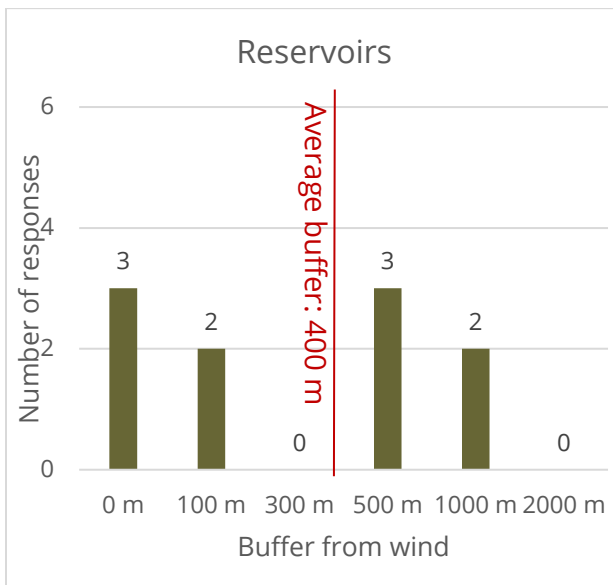


Buffers for water management features

Please provide a buffer from wind development for the following water management features (0 m = no buffer).

	0 m	100 m	300 m	500 m	1000 m	2000 m	Total
Reservoirs	30.00%	20.00%	0.00%	30.00%	20.00%	0.00%	10
Treatment Plants	30.77%	15.38%	7.69%	30.77%	15.38%	0.00%	13

	Average buffer size selected rounded to the nearest 100 (m)
Reservoirs	400
Treatment Plants	300



Appendix D: Report on Survey Score Comparisons – Council vs. Council & Staff

Comparison of survey results and final scores for modelling

Differences between in survey results between council responses and council and staff responses are presented in for solar (Table 1) and wind (Table 2). Most responses were similar between groupings and we have highlighted differences greater than 10 (value) or 250 m (buffer). Final scores may differ from original scoring based on discussion at the workshop or subcommittee meetings which involved various staff and council members. Buffers equal to zero indicate that no additional buffer area will be assigned to a feature, but buffers may exist for specific infrastructure types.

Table 1. Comparison of survey results and final scores used in modelling for solar.

Theme	Feature	Solar				Final Score
		Council	Council + staff	Difference	Notes on if/how values have changed since initial survey	
<i>Agriculture</i>						
	Native prairie	86	83	2		83
	Tame pasture	71	64	7		85
	Cropland – Class 1/2	89	70	19	Discussed in subcommittee meeting, agriculture layer was changed to Canadian Land Inventory (CLI) and re-scored by subcommittee	100
	Cropland – Class 3/4	68	58	10		90
	Cropland – Class 5/6	25	33	-8		65
	Cropland – Class 7	18	28	-10		0
	Agri-business	33	50	-17		Data gap
	Agricultural community	54	55	-1		Data gap
	Irrigation Acres					Not included in initial survey, scored by subcommittee
<i>Ecological</i>						
	Environmental reserves	67	75	-8	Changed to no-go following discussions with Jeff and Dom	No-go (municipality)
	Private conservation lands	63	71	-9		No-go
	Key wildlife and biodiversity zones	79	82	-3		82
	Grizzly bear zones	79	77	2	None in RVC	n/a
	Native grasslands	75	78	-3		78
	Wildlife movement areas	71	73	-2		73
	Riparian areas	75	78	-3		78
	Unnamed lakes	68	64	4		64
	Groundwater aquifer recharge areas	68	77	-9		Data gap
	Wetlands Group 1: area of wetland is very high				Not included in initial survey, scored by subcommittee	80
	Wetlands Group 2: area of wetland is high					60
	Wetlands Group 3: area of wetland is medium					40

Theme	Feature	Solar				
		Council	Council + staff	Difference	Notes on if/how values have changed since initial survey	Final Score
	Wetlands Group 4: area of wetland is low					20
	Wetlands Group 5: area of wetland is very low					0
Cultural						
<i>Value</i>						
	Wearmouth buffalo jump	75	72	3		72
	Cemeteries	46	52	-6	May be a data gap	52
	Dixon stevenson trail	63	54	9	Removed as per Jeff's instruction	n/a
	Historic schools	46	44	3	Likely a data gap	44
	Scenic views from hwy 22	71	70	1	Removed following workshop discussion	n/a
	Provincial parks	82	81	1		81
	Conservation sites	71	67	4		67
	Calgary parks	79	75	4		75/900 m buffer
	Provincial habitat area	75	77	-2		77/100 m
	HRV class 3	79	73	6		73
	HRV class 4	71	65	6		65
	HRV class 5	63	60	3		60
Buffer						
	Wearmouth buffalo jump buffer	1000	1036	-36		1000
	Cemeteries buffer	625	638	-13	Changed after workshop discussion	0
	Dixon stevenson trail buffer	825	673	152	Removed as per Jeff's instruction	n/a
	Historic schools buffer	460	471	-11	Likely a data gap; Buffer changed after workshop discussion	0
	Scenic views from hwy 22 buffer	1260	1236	24	Removed after workshop discussion	n/a
	Provincial parks buffer	1060	1129	-69		1100
	Conservation sites buffer (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	900	964	-64		1000
	Calgary parks buffer	1125	923	202		900
	Provincial habitat area buffer	75	1036	-961	Jeff followed up with staff; revised number to align with council, rounded to nearest 100.	100
Settlement and Infrastructure						
<i>Buffer</i>						
	Urbanized areas (residential/commercial areas in cities/towns)	883	887	-3		900
	Grouped County Residential	1050	907	143		900
	Hamlets	967	1053	-87		1100

Theme	Feature	Solar				Final Score
		Council	Council + staff	Difference	Notes on if/how values have changed since initial survey	
	Commercial Establishments and Subdivisions	867	627	240	Revised after workshop discussion	0
	Solar farms	283	147	137	Revised after workshop discussion	0
	Wind farms	267	207	60		0
	Transmission	180	157	23		0
	Oil and Gas Processing	180	164	16		0
	Mineral Extraction	280	186	94		0
	Power plants	280	200	80		0
	Waste transfer sites	280	200	80		0
	divided highways	740	579	161		0
	Paved roads	500	371	129		0
	Gravel roads	360	307	53		0
	Airports	560	629	-69		0
	Airfields	520	614	-94		0
	Railways	180	357	-177		Revised after workshop discussion
	Reservoirs	300	236	64		200
	Treatment Plants	300	243	57		200
Irrigation Canals				Not included in initial survey, scored by subcommittee	0	

Table 1. Comparison of survey results and final scores used in modelling for wind.

Theme	Feature	Wind				Final Score
		Council	Council + staff	Difference	Notes	
<i>Agriculture</i>						
	Native prairie	46	60	-14	Reassessed at workshop 1	55
	Tame pasture	46	50	-4	Reassessed at workshop 1	55
	Cropland – Class 1/2	58	57	1	Discussed in subcommittee meeting, agriculture layer was changed and re-scored by subcommittee	80
	Cropland – Class 3/4	42	46	-5		70
	Cropland – Class 5/6	25	38	-13		45
	Cropland – Class 7	17	34	-17		0
	Agri-business	40	42	-2		Data gap
	Agricultural community	50	50	0		Data gap
<i>Ecological</i>						
	Environmental reserves	61	67	-6	Changed to no-go following discussions with Jeff and Dom	No-go (municipality)
	Private conservation lands	57	63	-6	Changed to no-go following discussions with Jeff and Dom	No-go
	Key wildlife and biodiversity zones	67	73	-7		73
	Grizzly bear zones	54	68	-14	None within RVC	n/a
	Native grasslands	54	61	-7		61
	Wildlife movement areas	67	68	-1		68
	Riparian areas	54	63	-8		62

Theme	Feature	Wind			Notes	Final Score
		Council	Council + staff	Difference		
	Unnamed lakes	38	50	-13	Jeff discussed with staff; decision to go with council-only score	38
	Groundwater aquifer recharge areas	46	52	-6		Data gap
	Wetlands Group 1: area of wetland is very high				Not included in initial survey, scored by subcommittee	60
	Wetlands Group 2: area of wetland is high					45
	Wetlands Group 3: area of wetland is medium					35
	Wetlands Group 4: area of wetland is low					15
	Wetlands Group 5: area of wetland is very low					0
<i>Cultural</i>						
<i>Value</i>						
	Wearmouth buffalo jump	75	68	7		68
	Cemeteries	25	43	-18	Jeff discussed with staff; decision to go with council-only score	25
	Dixon stevenson trail	56	56	0	Removed as per Jeff's instruction	n/a
	Historic schools	25	39	-14	Jeff discussed with staff; decision to go with council-only score	25
	Scenic views from hwy 22	70	75	-5	Removed following workshop discussion	n/a
	Provincial parks	75	80	-5		80
	Conservation sites	58	70	-11	Jeff discussed with staff; decision to go with council-only score	58
	Calgary parks	71	71	-1		71
	Provincial habitat area	63	71	-9		71
	HRV class 3	58	61	-2		61
	HRV class 4	55	56	-1		56
	HRV class 5	54	55	-1		50
<i>Buffer</i>						
	Wearmouth buffalo jump buffer	1300	1129	171		1100
	Cemeteries buffer	633	686	-52	Changed in workshop	0
	Dixon stevenson trail buffer	860	800	60	Removed as per Jeff's instruction	n/a
	Historic schools buffer	483	631	-147	Likely a data gap, buffer changed in workshop	0
	Scenic views from hwy 22 buffer	1260	1292	-32	Removed based on workshop discussion	n/a
	Provincial parks buffer	1133	1164	-31		1200

Theme	Feature	Wind				Final Score	
		Council	Council + staff	Difference	Notes		
	Conservation sites buffer (Dewitt's Pond, Kent, Frosner-Boyach wetlands, Weed Lake, McKinnon Flats)	983	1029	-45		1000	
	Calgary parks buffer	1133	1093	40		1100	
	Provincial habitat area buffer	63	1093	-1030	Jeff discussed with staff; decision to go with council-only score	100	
Settlement and Infrastructure							
Buffer							
	Urbanized areas (residential/commercial areas in cities/towns)	900	871	29		900	
	Grouped County Residential	760	854	-94	Changed after workshop discussion	900	
	Hamlets	933	957	-24		1000	
	Commercial Establishments and Subdivisions	700	621	79		600	
	Solar farms	250	157	93	Revised after workshop discussion	0	
	Wind farms	167	107	60		0	
	Transmission	180	154	26		0	
	Oil and Gas Processing	160	169	-9		0	
	Mineral Extraction	300	223	77		0	
	Power plants	280	154	126		0	
	Waste transfer sites	280	215	65		0	
	divided highways	540	469	71		Height of tower + 10 % = 179 m	
	Paved roads	440	431	9		Height of tower + 10 % = 179 m	
	Gravel roads	260	308	-48		Height of tower + 10 % = 179 m	
	Airports	620	900	-280		0	
	Airfields	620	900	-280		0	
	Railways	220	500	-280		Reassessed in workshop 1	Height of tower + 10 % = 179 m
	Reservoirs	340	370	-30			400
	Treatment Plants	300	346	-46		300	
	Irrigation Canals				Not included in initial survey, scored by subcommittee	0	

Appendix E. Recommendations following workshop 2

At the workshop to share MLUST spatial analysis results with Rocky View County council and executive staff, a few concerns were raised. This document outlines those concerns and how those concerns were addressed. Some changes were agreed upon by council during the workshop, while others are based on our recommendations on how to adequately address the problem that was identified. This document also presents the old solar and wind suitability maps, and the new ones that contain all the changes discussed within. We have also included the old and new ecological and agricultural layers as reference since this is where most of the change happened.

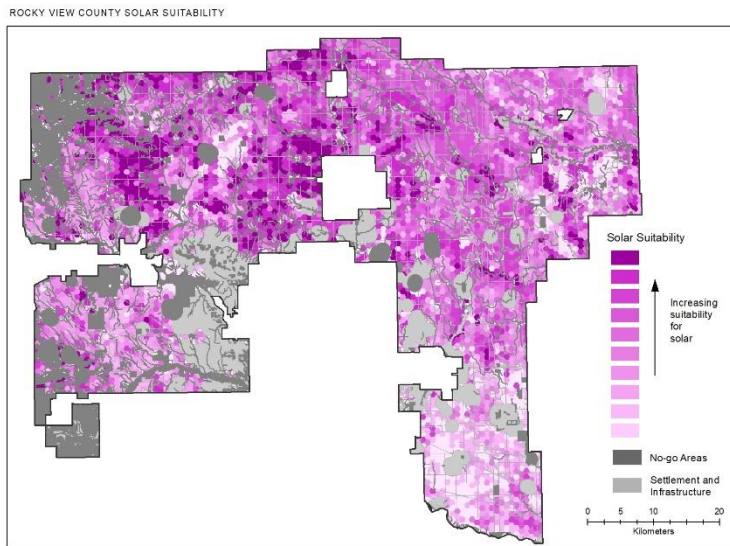
Issue Identified	Resolution	Recommended or confirmed
Concern over forested areas being included in potential wind development area	Forested areas were removed using the same method that was done for solar and presented to council at workshop 2.	Confirmed
Harmony hamlet area missing	Added to settlement and infrastructure layer	Confirmed
A lot of potential area in industrial zones were removed by buffers	Clip out industrial zones from settlement and infrastructure layer to add these to the potential area for solar only	Confirmed
Councillors were interested in adding the Balzac ASP to the map that showed solar potential with industrial zones	Balzac ASP area was added to this map	Confirmed
Too much potential removed in settlement layer where areas are zoned and not developed	Removed buffer on rural residential zoning but not hamlets.	Recommended
Southeast corner of RVC had suitability too low compared to council's expectation (possibly an imbalance of scores)	<ul style="list-style-type: none"> • Wetland layer was re-analysed as follows: <ul style="list-style-type: none"> - Wetlands were split up over 10 quantiles instead of 5 (as initially done) - Only scored the top 5 quantiles (70, 50, 30, 10, 0) - This reduces the overall impact of wetlands which addresses concerns around accuracy of the layer and that our old method may be over valuing wetlands by confounding density with health • Canadian Land Inventory (CLI) was re-analysed as follows: <ul style="list-style-type: none"> - Classes were split to improve refinement and re-scored - Solar from Class 1-7: 100,90,85,70,65,40,0 - Wind from Class 1-7: 80,75,70,65,45,40,0 	Recommended
Northwest corner of RVC had suitability that may	<ul style="list-style-type: none"> • Increase grassland value in the ecological layer to 100 for both solar and wind. This was based on ORRSC's 	Recommended

Issue Identified	Resolution	Recommended or confirmed
be "too high" (possibly an imbalance of scores)	<p>knowledge that industry is staying clear of native grassland for renewable projects because of its ecological value.</p> <ul style="list-style-type: none"> • Re-scored CLI (see above): re-scoring places native and tame pasture at or very slightly below the value of CLI class 3 for solar, whereas it was previously below class 4. 	

Old

Solar Suitability	Acres	%
Top 5%		
Top 10%	67344	7
Top 20%	134982	14
Total Potential	681223	70.5

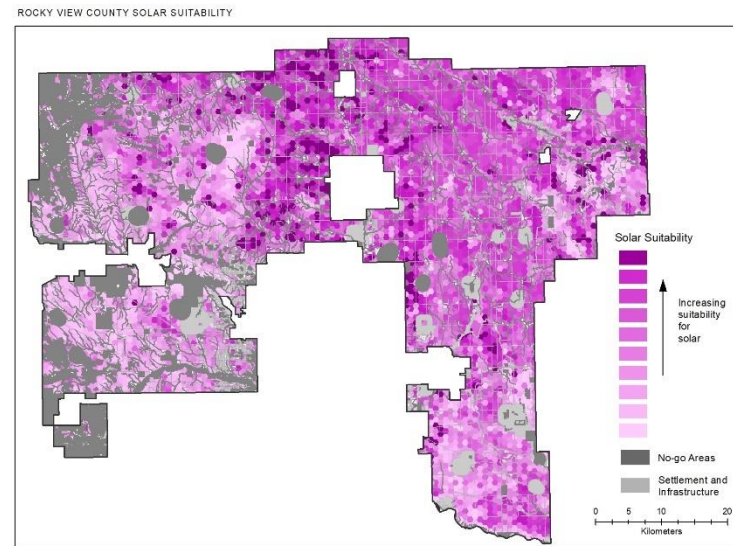
Old Solar Suitability Map



New

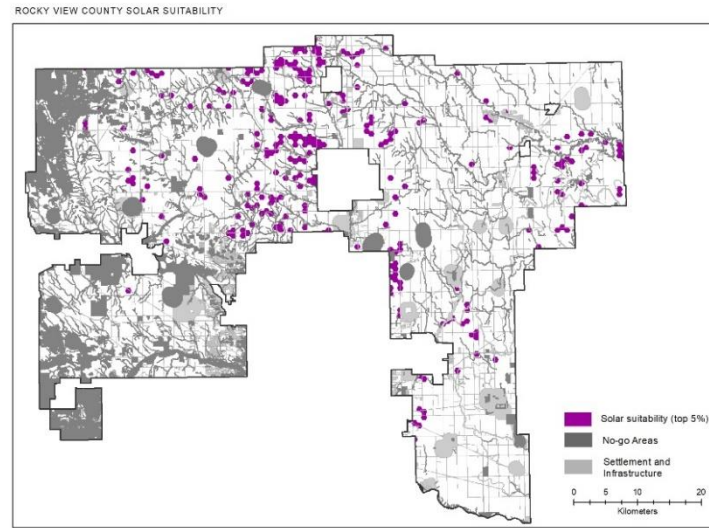
Solar Suitability	Acres	%
Top 5%	39030	4
Top 10%	81245	8.4
Top 20%	160914	16.6
Total Potential	730162	75.5

New Solar Suitability Map



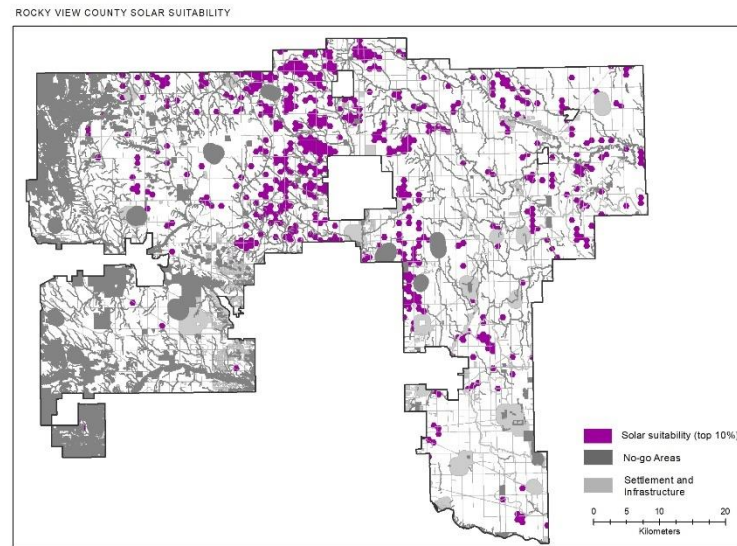
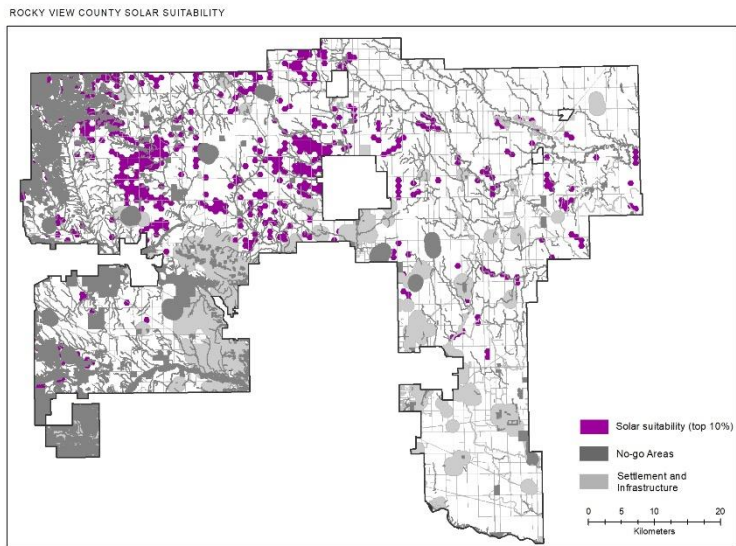
Old Solar – Top 5% - not previously shown

New Solar – Top 5%



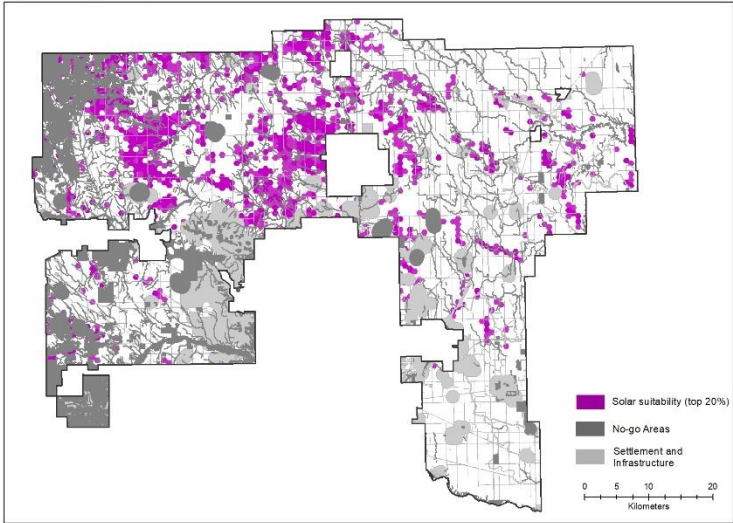
Old Solar – Top 10%

New Solar – Top 10%



Old Solar - Top 20%

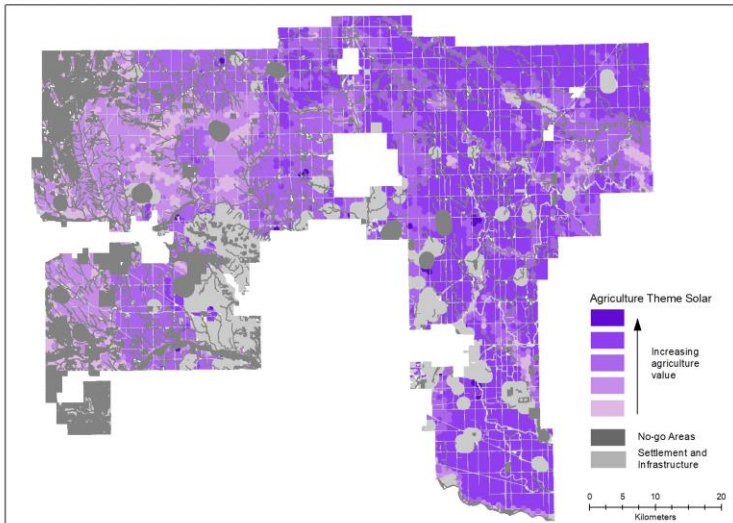
ROCKY VIEW COUNTY SOLAR SUITABILITY



New Solar - Top 20% - not presented

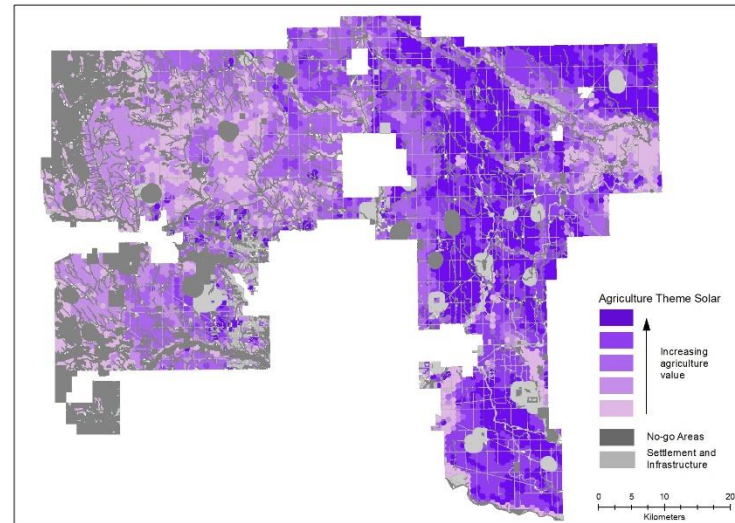
Old Merged Agriculture Layer - Solar

ROCKY VIEW COUNTY AGRICULTURE THEME - SOLAR



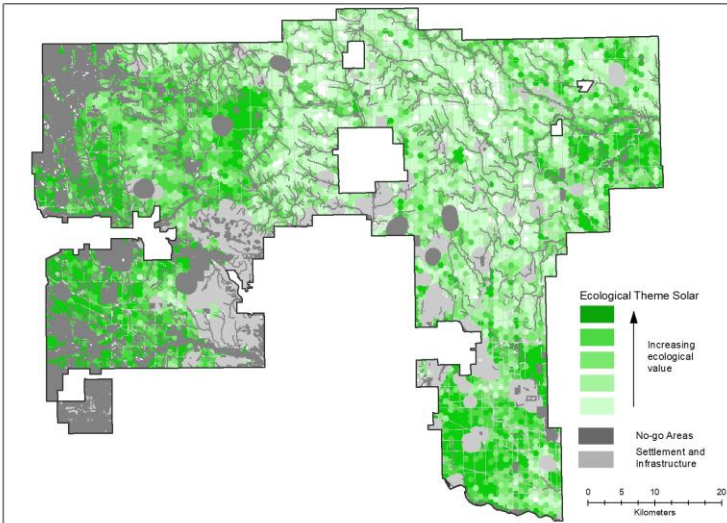
New Merged Agriculture Layer - Solar

ROCKY VIEW COUNTY AGRICULTURE THEME - SOLAR



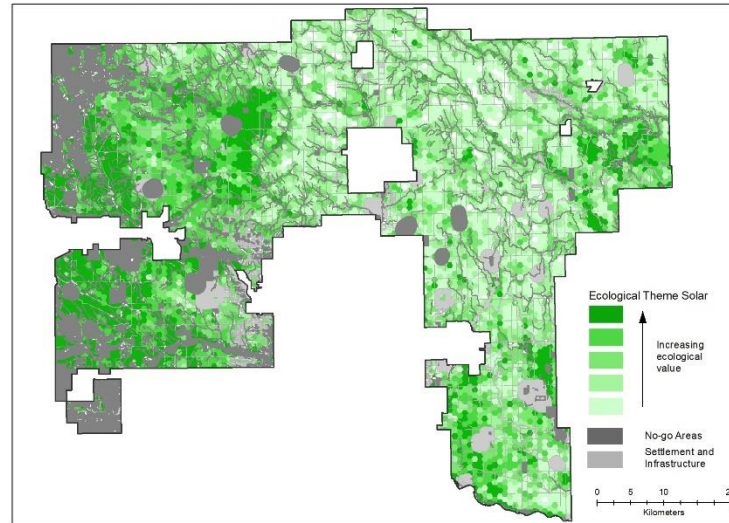
Old Merged Ecology Layer - Solar

ROCKY VIEW COUNTY ECOLOGICAL THEME - SOLAR



New Merged Ecology Layer - Solar

ROCKY VIEW COUNTY ECOLOGICAL THEME - SOLAR



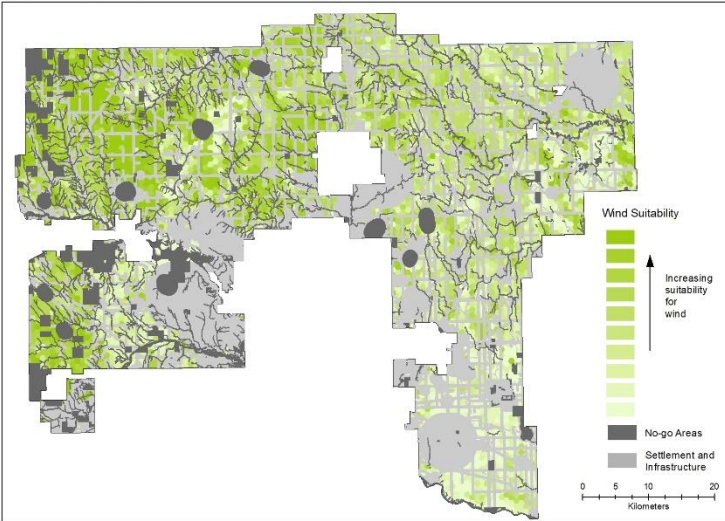
WIND

Old		
Wind Suitability	Acres	%
Top 5%	Not calculated	Not Calculated
Top 10%	48942	5
Top 20%	100173	10
Total Potential	475799	49

New		
Wind Suitability	Acres	%
Top 5%	25359	2.6
Top 10%	51118	5
Top 20%	100097	10
Total Potential	444698	46

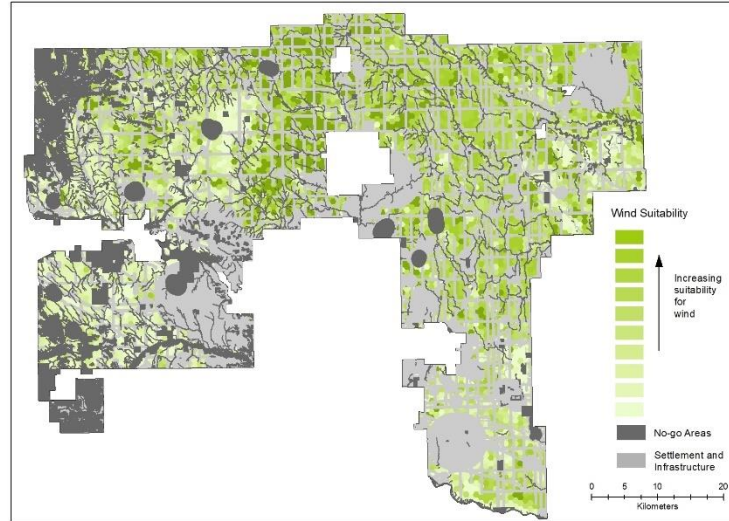
Old Wind Suitability Map

ROCKY VIEW COUNTY WIND SUITABILITY



New Wind Suitability Map

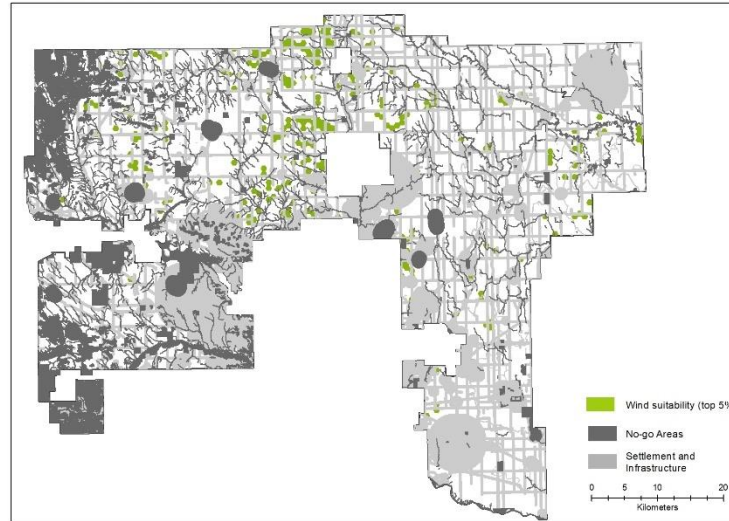
ROCKY VIEW COUNTY WIND SUITABILITY



Old Wind - Top 5% - Not shown

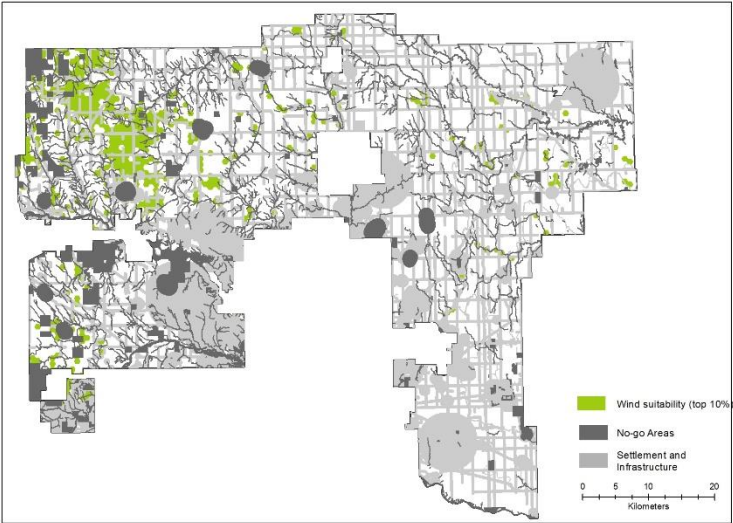
New Wind -Top 5%

ROCKY VIEW COUNTY WIND SUITABILITY



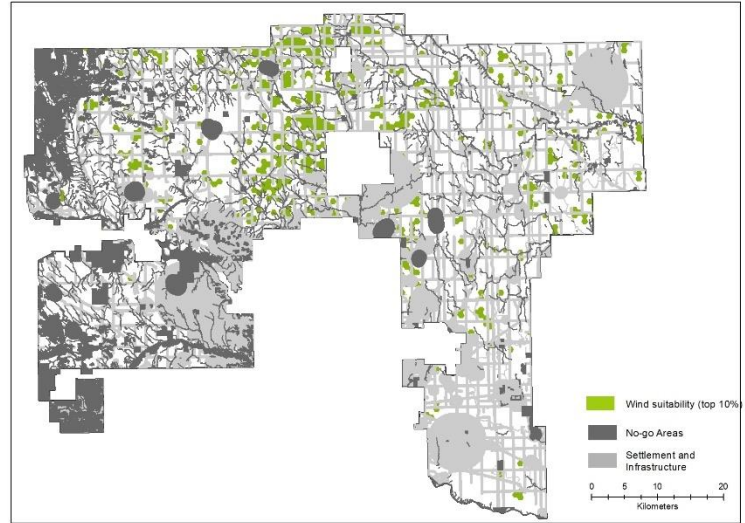
Old Wind - Top 10%

ROCKY VIEW COUNTY WIND SUITABILITY



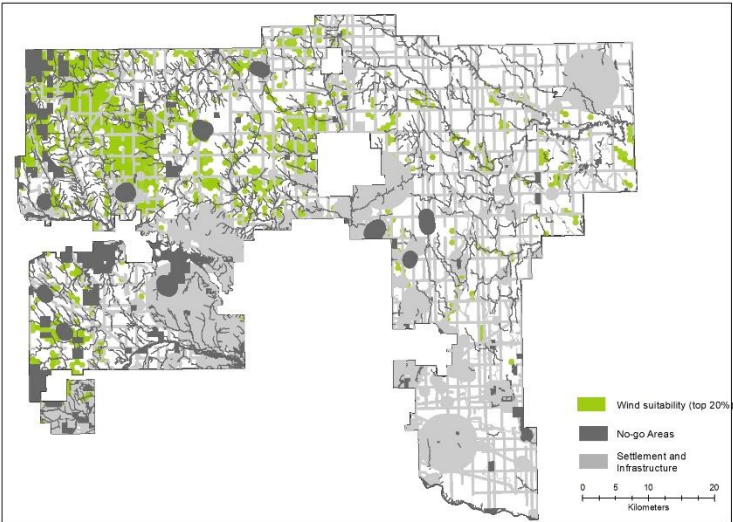
New Wind - Top 10%

ROCKY VIEW COUNTY WIND SUITABILITY



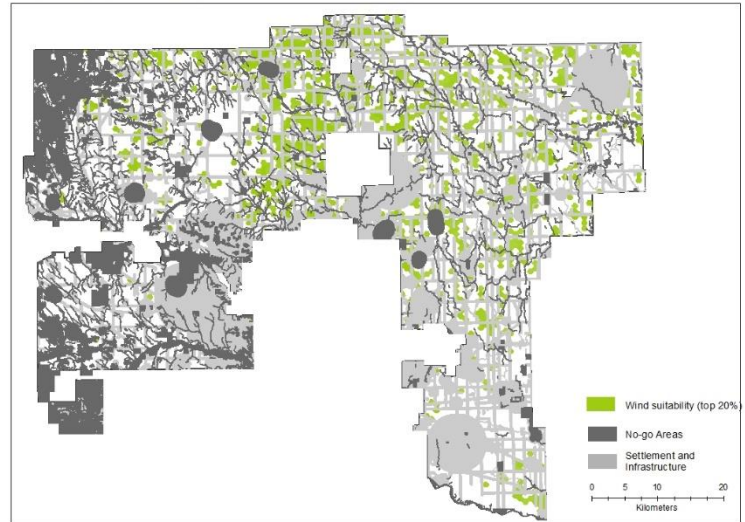
Old Wind - Top 20%

ROCKY VIEW COUNTY WIND SUITABILITY



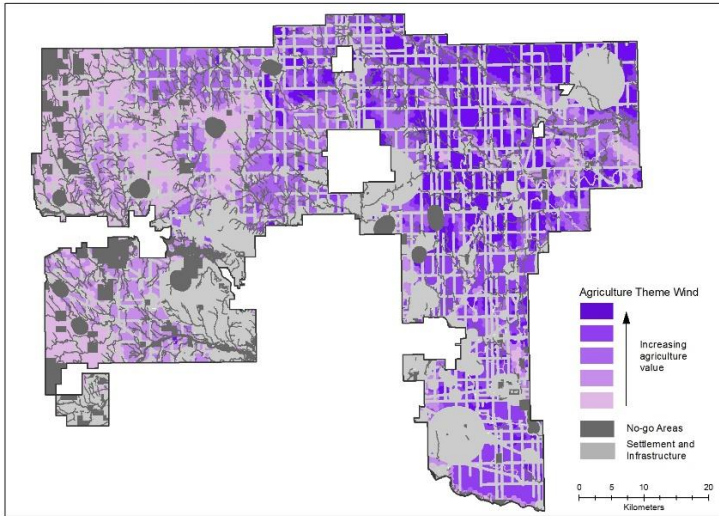
New Wind - Top 20%

ROCKY VIEW COUNTY WIND SUITABILITY



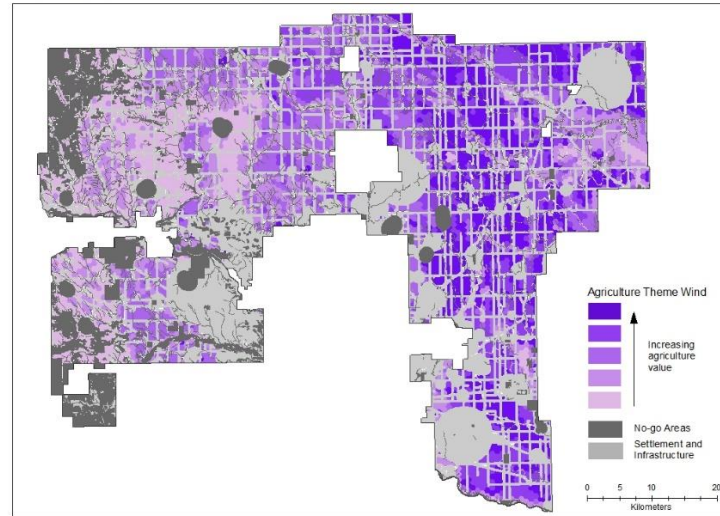
Old Merged Agriculture

ROCKY VIEW COUNTY AGRICULTURE THEME - WIND



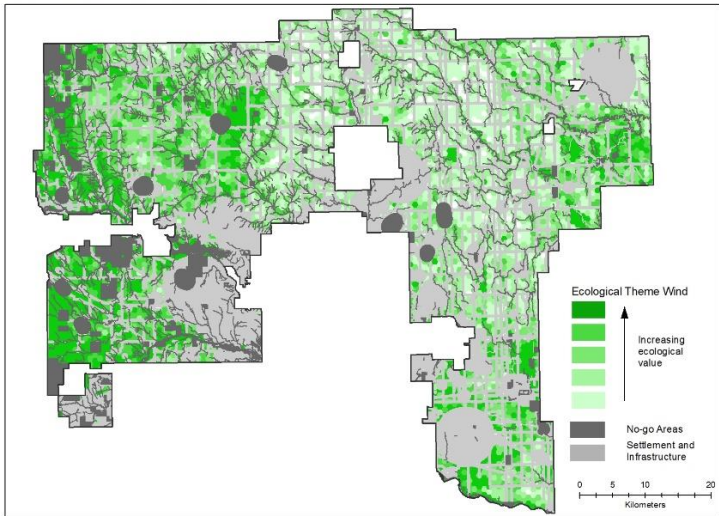
New Merged Agriculture

ROCKY VIEW COUNTY AGRICULTURE THEME - WIND



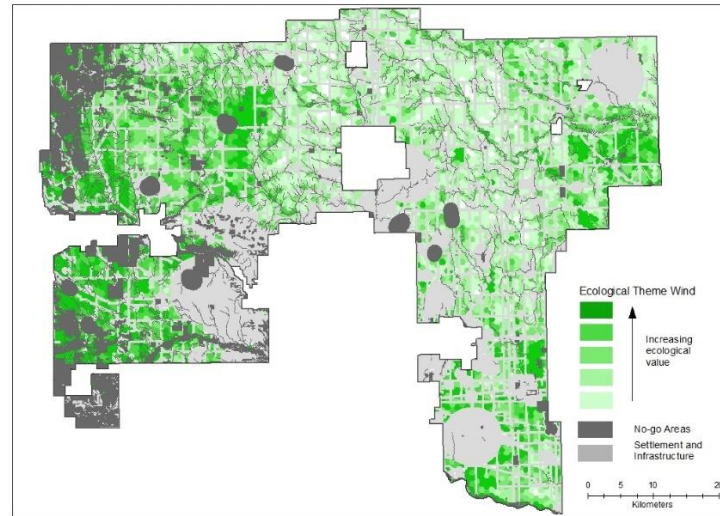
Old Merged Ecological

ROCKY VIEW COUNTY ECOLOGICAL THEME - WIND



New Merged Ecological

ROCKY VIEW COUNTY ECOLOGICAL THEME - WIND



Appendix F. Spatial representation of key features

Settlement and Infrastructure

ROCKY VIEW COUNTY SETTLEMENT AND INFRASTRUCTURE: INDUSTRIAL FEATURES FOR SOLAR

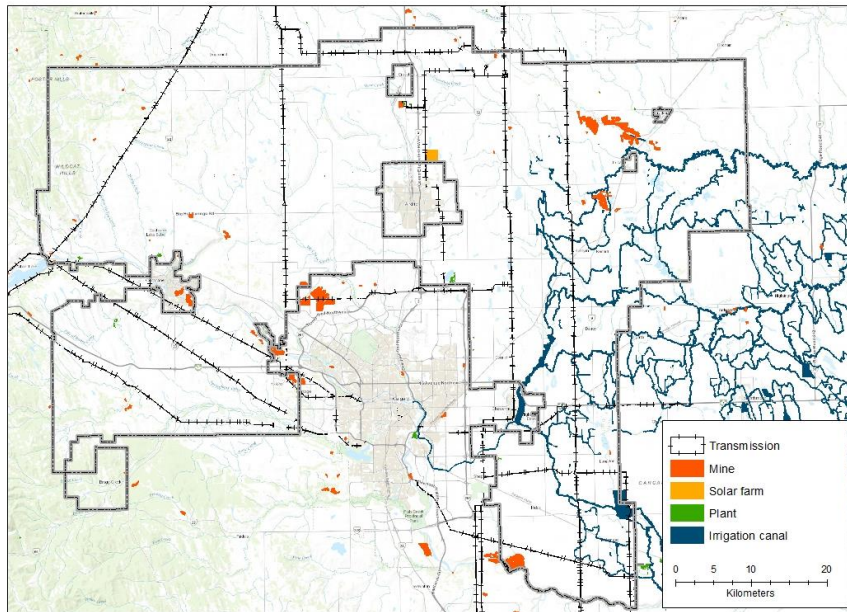


Figure 28. Some features included in the settlement and infrastructure non-development layer

Agricultural Theme

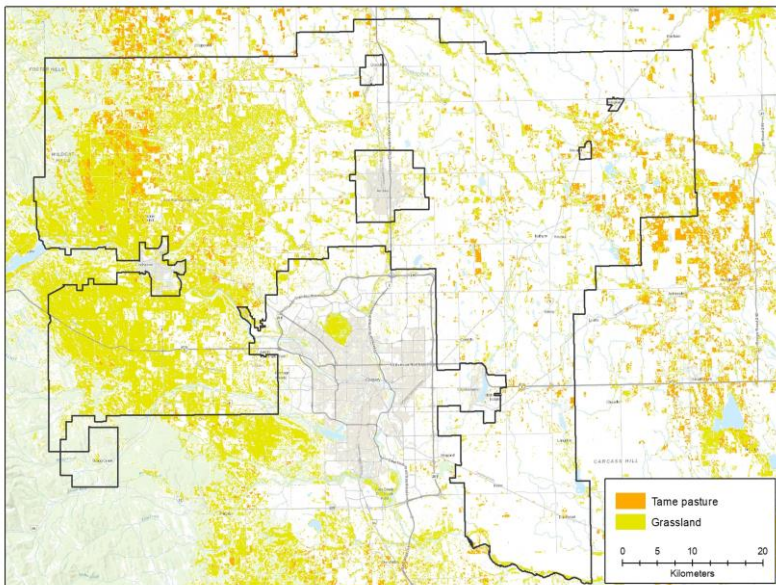


Figure 29. Native grassland and tame pasture. Native grasslands was also used in the ecological theme.

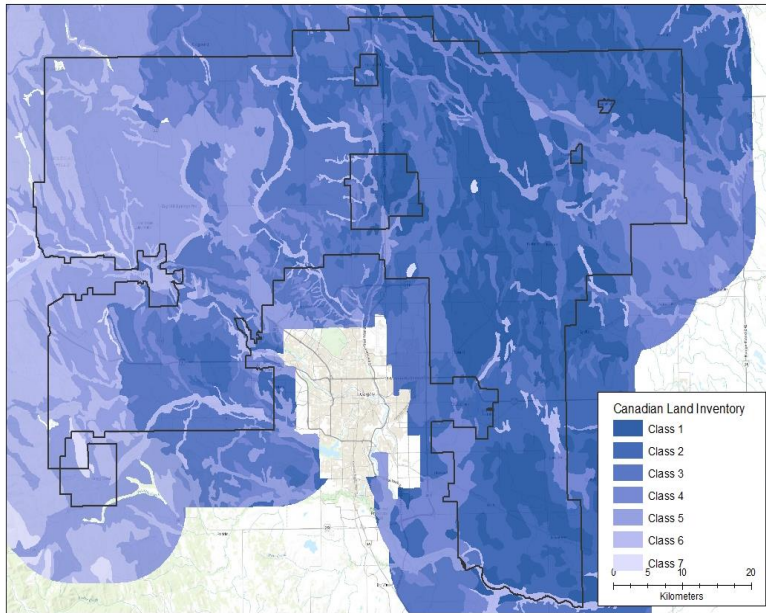


Figure 30. Canadian Land Inventory (CLI)

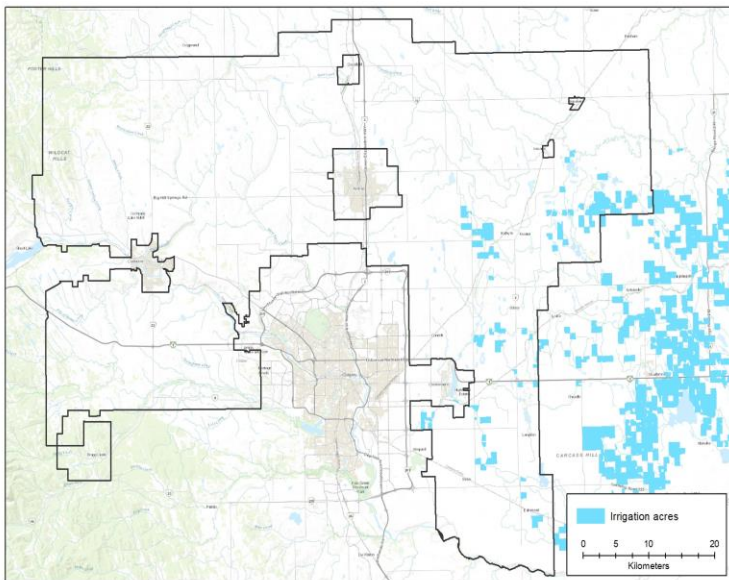


Figure 31. Irrigation Acres

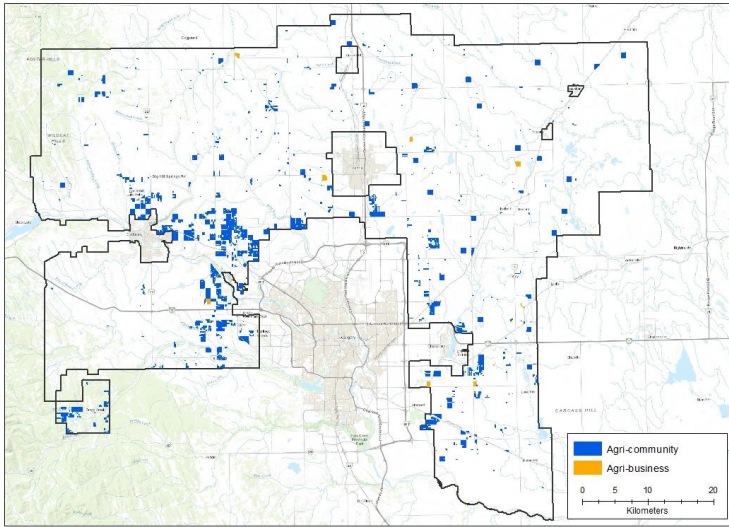


Figure 32. Agri-business and agri-community

Ecological Theme

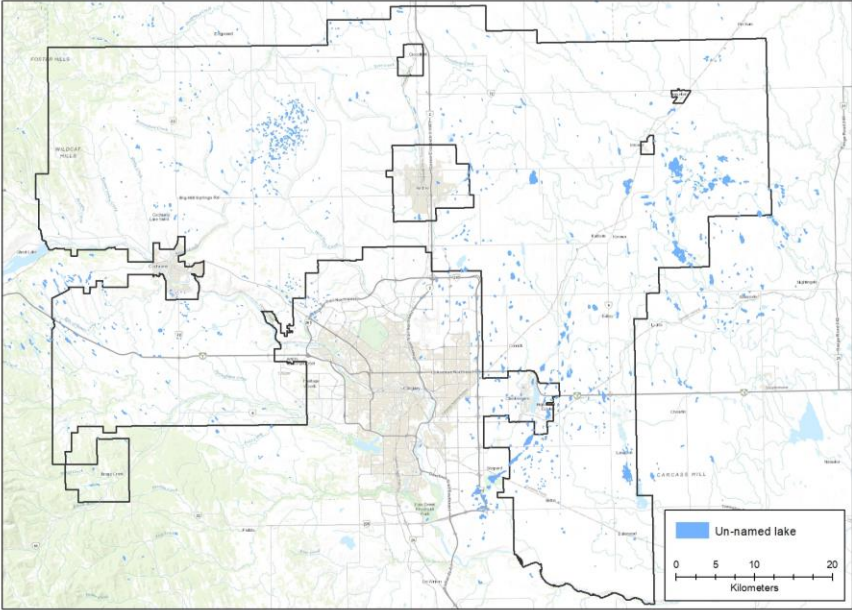


Figure 33. Un-named lakes

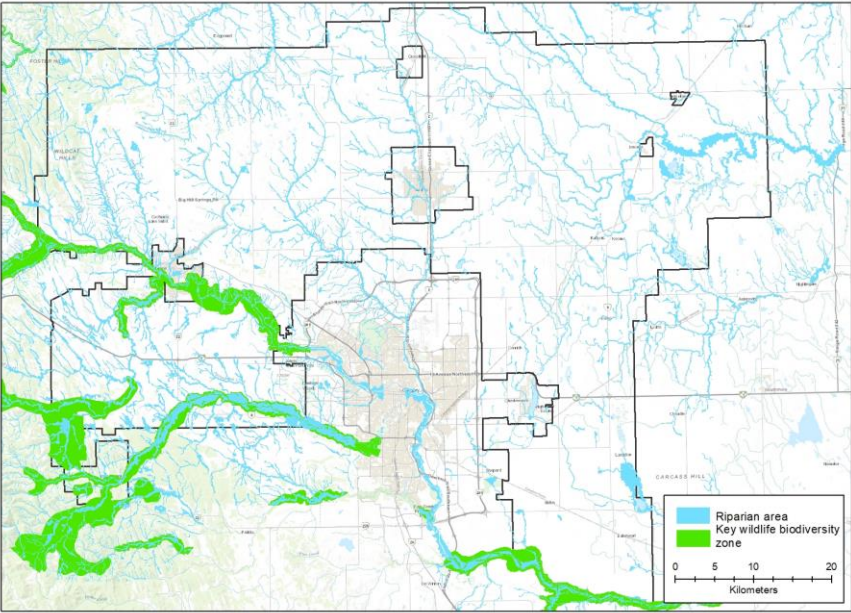


Figure 34. Riparian areas and key wildlife biodiversity zone

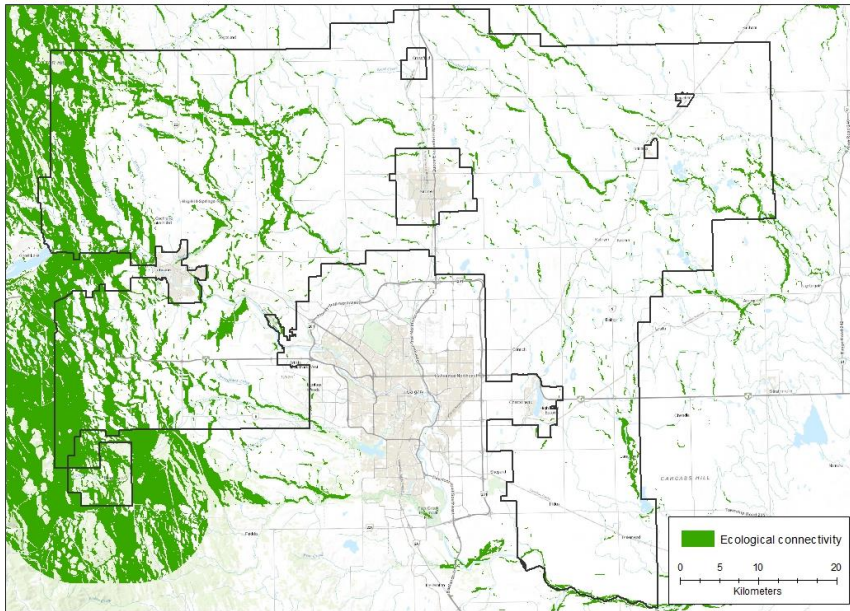


Figure 35. Ecological connectivity.

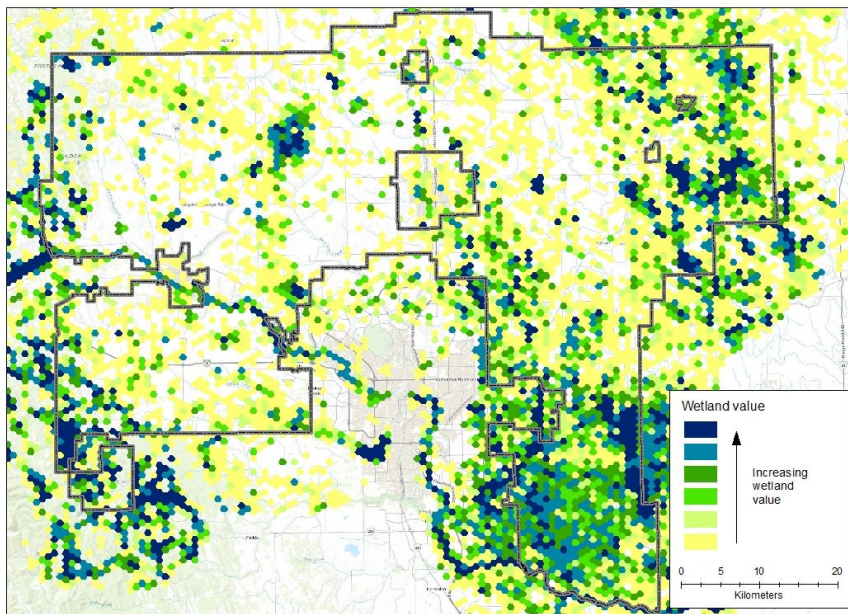


Figure 36. Wetlands shown as classes based on wetland density

Culture Theme

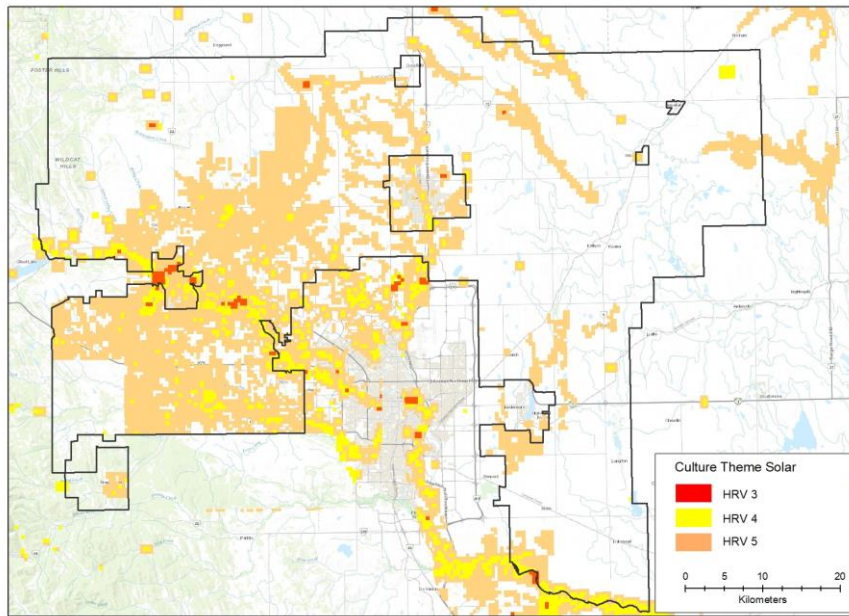


Figure 37. Historical Resources Values. Class 1 and 2 are not shown here and were included in the no-go layer. Class 5 was not included in modelling.

ROCKY VIEW COUNTY CULTURE THEME FEATURES - SOLAR

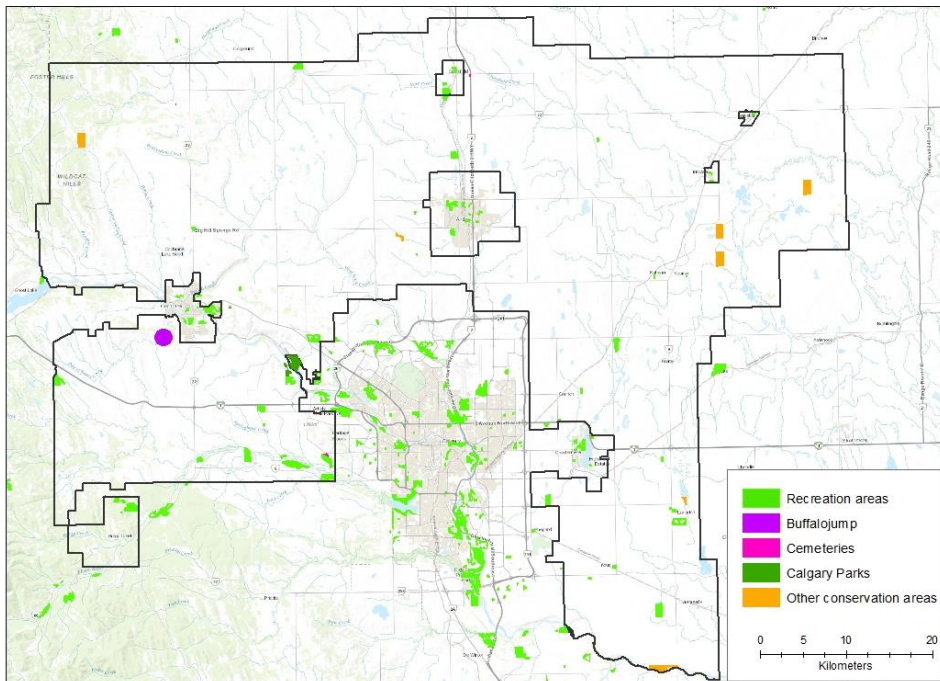


Figure 38. Conservation sites and other areas of cultural significance

Appendix G: Case Studies

Case Study Summaries

Case Study 1: AUC decision 27486-D01-2023 (Foothills County)

Foothills Solar GP Inc. (Foothills Solar) applied to construct and operate a solar power plant that would generate up to 150 megawatts (MW). The proposed project was to be located on privately owned cultivated and hay pastureland in Foothills County, west and southwest of the Hamlet of Blackie. The project's operational footprint would be 1500 acres, consisting of up to approximately 435,000 ground-mounted photovoltaic panels. Approximately 50 per cent of the proposed project was directly sited within the Frank Lake Important Bird and Biodiversity Area (IBA) and approximately 80 per cent of the project was sited within the Alberta Environment Wildlife Directive-recommended 1,000-metre setback from the IBA boundary.

Foothill County participated in the AUC hearing process and submitted information for the Commission to consider. The County owned land near the project area and was granted intervenor status for the hearing proceeding. The County was generally supportive of renewable energy projects but felt the proposed location was not appropriate. The project was to be located on quality agricultural land and the County submitted that protection of agricultural lands was clearly articulated in the South Saskatchewan Regional Plan and within the County's own Municipal Development Plan and Growth Management Strategy. The County also had concerns regarding the decommissioning and reclamation of the project and felt the subject had not been fully addressed by Foothills Solar. Finally, the County had concerns regarding fire risks around these types of development.

The AUC denied the application and most of the findings focused on environmental factor, specifically the impact of the Frank Lake IBA. The AUC in their decision did not address the County's concerns regarding the use of agricultural land or fire risks. The AUC did acknowledge that reclamation and decommissioning had been arising frequently in recent hearing proceedings and stated that the proponent could have been more forthcoming regarding the terms and conditions in the landowner agreements that addressed security and reclamation.

Case Study 2: AUC Decision 27077-D01-2022 (Municipal District of Taber)

Solar Krafte applied to construct and operate a 60-megawatt (MW) solar power plant and associated substation, together designated as the Vauxhall Solar Farm (the project). The solar power plant will consist of 198,666 solar photovoltaic panels, eighteen transformer and inverter stations, and underground collector lines that will connect to the proposed Substation. The project was located on approximately 194 hectares of private land in the Municipal District of Taber.

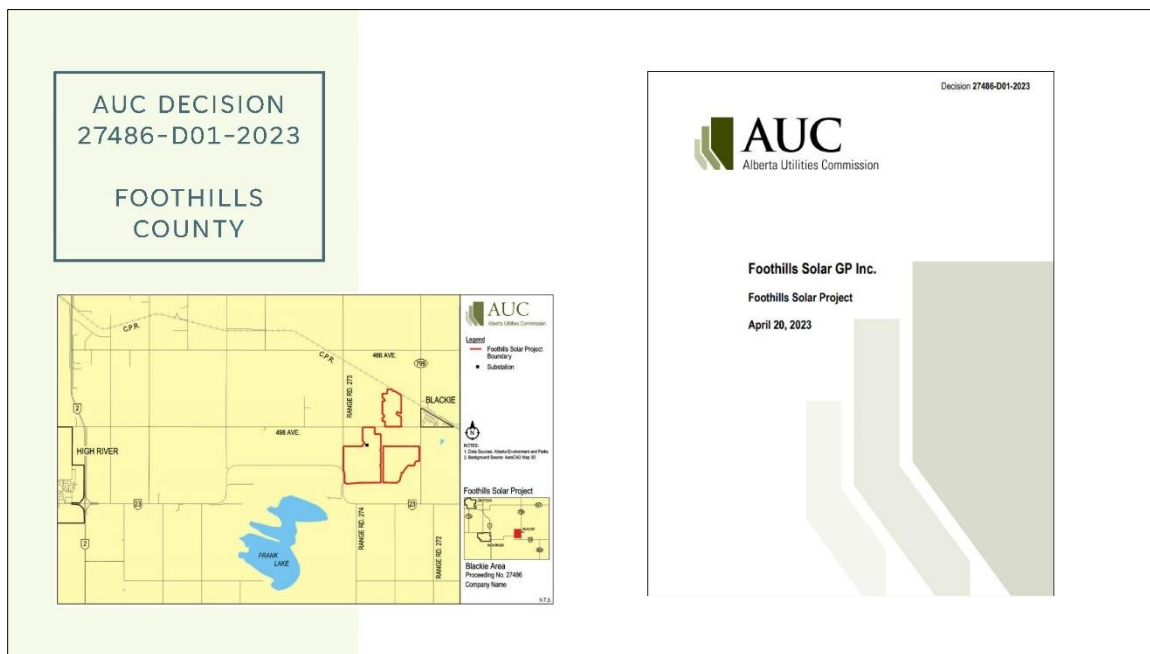
Preliminary consultation between the MD and the proponent had occurred in advance of a municipal development permit application, which had been submitted after the submission of an AUC application. The MD had a set of standards for the development of industrial scale solar projects, which included the requirement for a development hearing on the application to be held. The Development Authority issued a development permit with fifteen conditions, including an informative advising applicant that the MD of Taber shall not be responsible for future reclamation.

At the AUC hearing, the MD was not granted intervenor status but allowed to participate in the proceedings, which means that the MD was not eligible to recover costs associated with participating including hiring experts or legal counsel from the AUC. The MD submitted that it was not opposed to renewable energy projects but recognized that such projects would create lasting and significant impacts and asked the AUC to consider several comments and concerns. The first concern was the lack of reclamation security as it was unclear who will pay for liabilities in the event of insolvency of the company. The MD submitted that the application be denied or that a ten-million-dollar bond be posted to be held in trust for the hosting landowners. The basis for the MD's position included that the issuance of security was required by the public interest, and the municipal Land Use Bylaw required the proponent to issue security in respect of its reclamation obligations.

The AUC approved the application and found that Solar Krafte was not required to post security. The decision findings included that the lease for the project lands was a contractual agreement between the landowner and proponent and that the MD had attempted to insert itself into that contractual agreement as the security was proposed to be held in trust for the landowner. As well, the AUC had previously declined to require reclamation security since the current legislation allows for the Minister of Environment and Protected Areas to designate the construction and operation of solar power generating facilities as activities requiring security to be posted and has not used this authority to impose reclamation security. AUC found that the MD had the discretion to impose security on the development permit but had not done so.

Case Study Presentation Slides

Case Study 1: Foothills County



PROJECT OVERVIEW FOOTHILLS SOLAR PROJECT



SIZE

150 Megawatts
Solar Power Plant
plus battery storage



COMPONENTS

- Consists of:
- 445,000 solar photovoltaic panels,
 - 4 km of new 138kV collector line to Substation



LOCATION

Located on 607 ha
(1500 acres)
(11 quarter sections)



CONSULTATION

Consulted with stakeholders within 800m of project and notified stakeholders within 2000m of project.

5

FOOTHILLS COUNTY CONCERNS



County generally supportive of renewable projects but feel the proposed location is not appropriate.



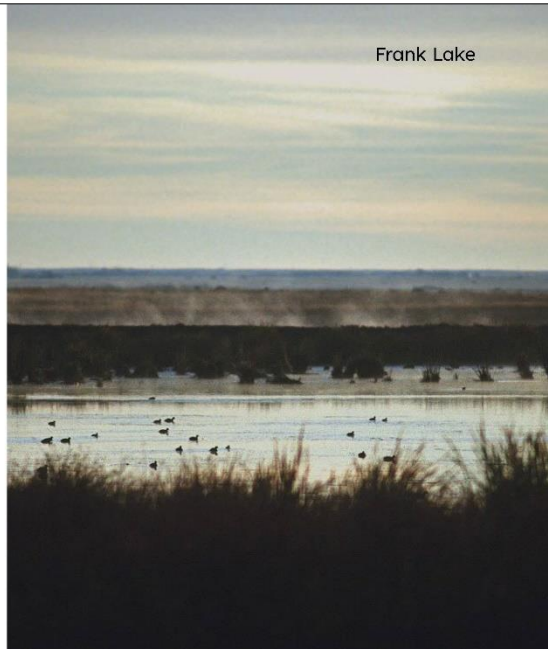
Protection of agricultural land is clearly articulated in the SSRP, MDP and Growth Management Strategy.



Conversion of 1500 acres of prime agricultural land is not in the public interest – growing food is in the public interest

Foothills County was granted intervener status

Frank Lake



AUC DECISION

APPLICATION DENIED

Majority of discussion and findings of the decision focused on environmental factors, specifically the Frank Lake Important Bird and Biodiversity Area (IBA).

* 50 % of project was located within the IBA and 80% within the recommended 1000m setback from named lakes.

Figure 2. The Frank Lake IBA boundary and the Foothills Solar Project boundary¹⁰



MUNICIPAL TAKE AWAYS...



County's position on conversion of agricultural lands was not addressed in the decision of the AUC.



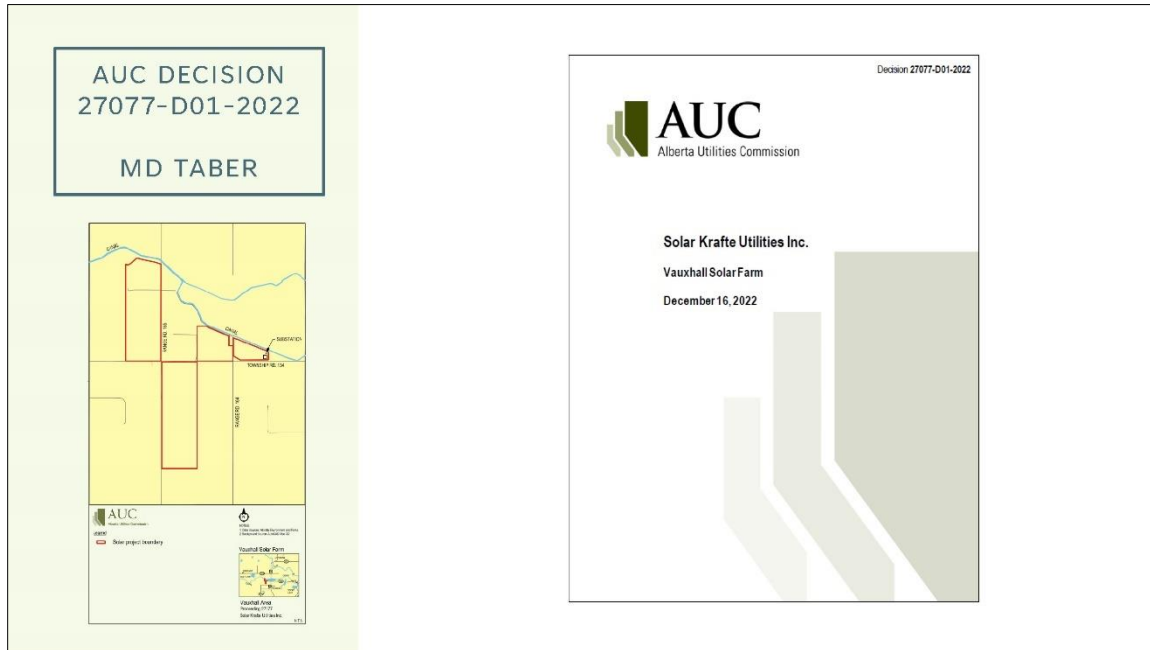
County's position on fire protection and mitigation was not addressed in the decision







AUC acknowledged that decommission has been arising frequently in recent proceedings. Would have like proponent to be more forthcoming regarding the terms and conditions of its landowner agreements that address security and reclamation.



Case Study 2: Municipal District of Taber



PROJECT OVERVIEW VAUXHALL SOLAR FARM

 <p>SIZE 60 Megawatts Solar Power Plant</p>	 <p>COMPONENTS Consists of:</p> <ul style="list-style-type: none"> • 198,666 solar photovoltaic panels, • 18 transformer and inverter stations, • Underground collector line to Substation 	 <p>LOCATION Located on 194 ha (479 acres) (NW17, W20, SE20, E30, SE31 13-16 W4M)</p>	 <p>CONSULTATION Proponent consulted with stakeholders within 800m of project and notified stakeholders within 2000m of project.</p>
---	---	---	--

12




CONCERNS

Reclamation and Decommission

- Lack of reclamation security
 - Unclear who will pay for liabilities in event of insolvency
 - Producer pay principle

14



AUC DECISION

RECLAMATION AND MUNICIPALLY ENACTED LAWS

MD POSITION

- MD submitted application be denied or a 10 million dollar bond be posted to be held in trust for the hosting landowners.
- Basis for position:
 - Issuance of security was required by the public interest, and
 - The MD's Land Use Bylaw required proponent (Solar Krafte) to issue security in respect of its reclamation obligations.

15



AUC DECISION

RECLAMATION AND MUNICIPALLY ENACTED LAWS

AUC DECISION AND FINDINGS

- AUC found that Solar Krafte was not required to post security.
 - Project is in the public interest, without conditions requiring security
 - Contractual agreement between the landowner and Solar Krafte and that the MD attempted to insert itself into that contractual agreement as the security was to be held in trust for the landowner
 - The Polluter Pay Principle does not dictate the use of specific regulatory tools (ie bonds), when an existing regulatory scheme is in place in relation to reclamation obligations
 - AUC had previously declined to require reclamation security since the legislation has provided the Minister of Environment and Protected Areas to designate the construction and operation of solar power generating facilities as activities requiring security to be posted and has not used this authority to impose reclamation security
- AUC found MD had the discretion to impose security on the development permit through provisions of Land Use Bylaw but had not done so.

Miistakis Institute
EB3013, Mount Royal University
4825 Mount Royal Gate SW
Calgary, Alberta T3E 6K6

www.rockies.ca



**Miistakis
Institute**