

Survey of complaints received by relevant authorities regarding operating wind energy in Alberta

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With contributions by Eli Angen and Tim Weis

July 2013

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- promoting pragmatic policy approaches for governments to avoid dangerous climate change, such as increasing the amount of renewable energy plugged into our electricity grids;
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Executive summary

Alberta has Canada's longest history with operating wind energy projects, with 20 years of utility-scale wind energy, as well as one of the highest levels of installations per capita in the country. While experiences in rural regions of other jurisdictions around the world have received some attention from both researchers and media, little research has been undertaken into rural Alberta's substantial experience with wind energy. This is an important gap in light of rural Alberta's unique context and the need to look to existing experience to inform the policy decisions of the present.

This research is a first step in filling this information void. It takes a non-anecdotal, objective approach to documenting formal complaints made to the most likely authorities in Alberta to receive complaints relating to wind energy. The authorities canvassed were:

- the Alberta Utilities Commission (AUC), the quasi-judicial, arm's-length regulator for the electricity sector
- operators of existing wind energy projects
- municipalities (municipal districts and counties) where operating wind energy projects are located
- local and provincial health authorities
- the beef industry association and municipal agricultural fieldmen

The AUC — the regulatory body governing both development and ongoing operation of wind energy in Alberta, as well as the authority most commonly suggested by interviewees as likely to receive any complaints — has not received a single complaint relating to utility-scale wind energy. The AUC reviewed the 31,000 contacts (written, email or phone) received since 2000, which varied widely in their subject matter (such as different types of energy sources) and nature (complaints, information inquiries, etc.). Among the 31,000 were dozens of contacts related to wind and dozens referencing noise, including a single contact about noise from a small-scale wind turbine — but none that the AUC determined was a complaint about utility-scale wind energy. By comparison, the ERCB, the analogous regulatory body for the oil and gas industry, receives hundreds of concerns each year regarding oil and gas activities, including more than 200 per year, on average, about operational impacts from the activities.

The operation of wind turbines in Alberta has not attracted many complaints to wind energy operators. In total, there were six concrete or specific complaints about operating wind turbines from the projects covered by the research (90 per cent of Alberta's total wind energy operating experience): five were resolved noise complaints, and one was a complaint about navigation lights required by transportation regulations. Two others were more generalized complaints about wind energy. Some wind energy developments have attracted considerably more complaints in their construction phase with impacts of construction equipment and traffic, though this varied widely between projects. These complaints were often from participating landowners with whom the wind energy company had a contractual relationship, and several concerned issues that are often the subject of agreements with the relevant municipality, such as road maintenance.

There was substantial variation between municipal offices about the frequency of complaints received during construction phase, with some municipalities noting frequent complaints about particular projects. This speaks to the propensity for major construction projects to cause some nuisance and annoyance to nearby residents, with respect to both road use and damage as well as debris and dust. However, the variation suggests that measures may be available to both municipalities and wind energy developers and their contractors that can mitigate these disturbances during construction phases. Only three complaints were received by municipalities regarding the actual operation of wind energy projects once built. Compared to the greater number of complaints brought to municipalities about the same wind energy projects during construction phase, this small number of complaints indicates that few serious complaints exist with respect to the operations of wind energy projects or, at least, that residents do not bring such complaints to municipal officials.

It was not clear from the research whether health complaints related to wind energy projects would be presented to community health inspectors. Nevertheless, between the two inspectors contacted, representing more than half of Alberta's capacity-weighted longevity of operating experience with wind energy projects, neither has received a complaint, whereas oil and gas complaints have been received.

Finally, among the industrial association for cattle producers in Alberta and five agricultural fieldmen able to speak to over 60 per cent of the capacity operating experience in Alberta, there were no complaints reported relating to livestock impacts from wind energy.

Across all of these authorities, very few complaints have been registered. Overall, as wind energy has integrated into the agricultural and energy development landscape in rural Alberta, complaints to any authorities have been infrequent and measurably fewer than have been received relating to analogous energy activities such as oil and gas operations.

More research would be valuable to determine if other friction points have arisen that have not resulted in formal complaints captured in this research, and what mitigations or best practices have worked and/or could be implemented. But the evidence gained from this research indicates that there is no pressing concern in wind-rural interactions in the Alberta context that would warrant obstruction or restriction of continued growth in wind energy in Alberta, so long as new developments are well regulated and continue to follow good practices in development, including local consultations, setback requirements and limitations that have been in place.

At the same time, given that the research found significant construction-phase complaints, particularly for some projects, there may be opportunities for improving and better standardizing construction practices and agreements between municipal governments and developers. More research on this score could help to determine best practices from case studies.

1. Introduction

1.1 History of wind energy in Alberta

After 20 years of history with utility-scale wind energy, Alberta has the longest history of operating wind turbines in Canada, and is among the highest in per capita installed capacity. Canada's first utility-scale wind energy project was installed at Cowley Ridge in southwestern Alberta in 1993, and it is still operational. Alberta led the country in wind energy milestones for over a decade (see Table 1), being the first to reach 250 MW of cumulative installed wind capacity in 2004, a milestone no other province would attain for another two years. Indeed, as of the end of 2004, Alberta had 17 wind energy facilities commissioned, compared to six in Ontario and five in Quebec, while no other province had more than four. As recently as September 2008, Alberta claimed the largest total commissioned wind energy capacity in Canada.¹ Outside of Prince Edward Island and Nova Scotia, Alberta still has the highest level of per capita wind capacity in Canada.

Table 1. Experience with wind energy facilities between Canada's three provinces with the most wind energy capacity

Province	Alberta	Ontario	Quebec
Installed capacity (April 2013) (MW)	1,117	2,043	1,721
Capacity per capita (W/person) ²	288	151	214
Year of first multiple-turbine facility	1993	2002	1998
Length of experience with wind energy projects > 10 MW	20 years	7 years	14 years
Length of experience with wind energy projects > 75 MW	10 years	7 years	6 years
Total capacity-weighted operating longevity (MW-years) ³	5,362	7,546	5,057

Data Source: CanWEA,⁴ unless otherwise noted.

While concerted efforts to increase wind energy capacity in Ontario and Quebec has enabled these two provinces to accumulate more installed wind capacity, Alberta still boasts comparatively large installed wind energy capacity, particularly for the size of its population and

¹ Canadian Wind Energy Association, "List of Wind Farms." http://www.canwea.ca/farms/wind-farms_e.php

² Statistics Canada, "Population by year, by province and territory." <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/demo02a-eng.htm>

³ Capacity-weighted operating longevity is used throughout this report as a combined indicator for both size of wind energy development (capacity, in MW) and the temporal length of experience with this capacity. It has been calculated by multiplying a wind energy project's installed capacity by the number of months it has been operating, as of March 31, 2013, rounding down to the nearest month, then converted to years.

⁴ Canadian Wind Energy Association, "List of Wind Farms."

total electricity generation capacity (see Table 1). Moreover, owing to Alberta's early adoption, it clearly has accumulated some of the most experience with operating wind energy projects.

Alberta's history with wind energy projects has been relatively concentrated in the southwest of the province, though recent years have brought greater diversity to Alberta's wind generation portfolio. As Table 2 shows, early wind energy development in Alberta was limited to the very southwest corner from 1993 until 2006. During that time, all development took place in only the three most southwesterly rural municipal districts and counties in Alberta (together, 1.8 per cent of the province's area⁵), plus one turbine on the Peigan reserve in the same region. Development moved east in 2006 into south-central Alberta, in the Municipal District (MD) of Taber, but until the very end of 2010, after 17 years of wind energy development, wind energy remained concentrated in only these four municipalities.

Table 2. Alberta's wind energy projects

Wind Energy Project	Commission Date	Capacity (MW)	Municipality
Optimist	Jun-93	0.15	MD of Pincher Creek
Cowley Ridge	Jan-94	21.4	MD of Pincher Creek
Castle River	Nov-97	0.6	MD of Pincher Creek
Waterton	Nov-98	3.78	Cardston County
Castle River II	Jan-00	9.9	MD of Pincher Creek
Castle River III	Jan-01	29.04	MD of Pincher Creek
Weather Dancer 1	Sep-01	0.9	Peigan Reserve
Cowley Ridge North	Oct-01	19.5	MD of Pincher Creek
Sinnott	Nov-01	6.5	MD of Pincher Creek
Lundbreck	Dec-01	0.6	MD of Pincher Creek
McBride Lake East	Dec-01	0.66	MD of Willow Creek
Summerview	Apr-02	1.8	MD of Pincher Creek
McBride Lake	Jun-03	75.24	MD of Willow Creek
Optimist II	Jan-04	0.75	MD of Pincher Creek
Taylor Project	Jan-04	3.38	Cardston County
Magrath	Sep-04	30	Cardston County
Summerview	Sep-04	68.4	MD of Pincher Creek
Kettles Hill Phase I	Mar-06	9	MD of Pincher Creek
Soderglen	Oct-06	70.5	MD of Willow Creek
Chin Chute	Nov-06	30	MD of Taber
Old Man River Project	Mar-07	3.6	MD of Pincher Creek

⁵ Statistics Canada, "Population and dwelling counts, for Canada, provinces and territories, and census subdivisions (municipalities), 2011 and 2006 censuses." <http://www12.statcan.gc.ca/census-recensement/2011/dp-pd/hltfst/pd-pl/index-eng.cfm>

Kettles Hill Phase II	Jul-07	54	MD of Pincher Creek
Taber	Sep-07	81.4	MD of Taber
Blue Trail	Nov-09	66	MD of Willow Creek
Summerview 2	Feb-10	66	MD of Pincher Creek
Ghost Pine	Dec-10	81.6	Kneehill County
Ardenville	Dec-10	69	MD of Willow Creek
Wintering Hills	Dec-11	88	Wheatland County
Castle Rock	May-12	75.9	MD of Pincher Creek
Halkirk	Dec-12	149.4	County of Paintearth

Data source: CanWEA,⁶ unless otherwise noted.

Since December 2010, however, three of five new wind energy projects — Alberta’s three largest — have come in three rural municipalities that are new to wind energy, to the east and north of Calgary and into east-central Alberta. This increasing geographic diversity is expected to continue, with projects in various phases of planning for much of southern and east-central Alberta, including new municipalities.⁷

At all phases of wind energy development in Alberta, though, wind energy has arisen in regions with significant agricultural activity, including rural residential dwellings and livestock operations. Over the past two decades, many rural farmers and landowners have seen wind energy arrive in their community.

1.2 Research impetus

The particulars of Alberta’s wind energy development history create a valuable context for research into the experience of interactions between wind energy projects and rural residents. For example, the experiences of rural residents in regions that have already seen wind energy development — whether only recently, or increasingly over the past 20 years — can inform perspectives and discussions around wind energy’s arrival to new regions or communities. It can help to point to areas where successful improvements have been made to the development or operation of wind energy or where policy might better protect residents’ interests, while also perhaps demonstrating some theoretical issues and concerns about wind energy that have not been borne out in the existing wind energy regions.

Unfortunately, however, there is no organized mechanism for recording and communicating this Alberta-specific experience. Despite the longevity of wind energy projects, particularly in southwestern Alberta, there has been no published consolidation or recording of the nature of the experiences between the operation of Alberta’s wind energy projects and nearby rural Albertans.

⁶ Canadian Wind Energy Association, “List of Wind Farms.”

⁷ See Alberta Electric System Operator, *Project List*, available at <http://www.aeso.ca/21648.html>. An analysis of the June Project List indicates that more than half of planned new wind energy capacity is outside of the southwest region of the province.

Research in other jurisdictions has looked into rural perspectives about the wind energy development that has taken place. The interactions between rural residents' interactions and wind energy developments in other provinces and countries have also received considerable media attention. Like any industrial development, wind energy projects have attracted both proponents and detractors, in different proportions depending on the region.

Some aspects about the context of wind energy development in Alberta are fairly particular to our province. First, wind energy developments are provincially regulated. Provincial policy broadly frames the opportunities for further wind energy development in the province's electricity system. Provincial government departments and arm's-length regulatory bodies determine whether to issue approvals for wind energy development under environmental, natural resource, land use laws, and a general "public interest" test.

Second, rural land uses near wind energy developments in Alberta have a certain degree of commonality, which is less true in other jurisdictions. Many rural regions seeing wind energy development in Alberta are active, relatively large-scale (on an area basis) agricultural operations. This includes both irrigated and dry cropland, livestock grazing land and more intensive cattle operations, both on adjacent land and in and around the land of participating landowners. In other jurisdictions, there is a greater mix of land uses, including smaller and more intensive agricultural operations, as well as more non-farming residential uses.

Given this context, there is value in understanding better the experience of actual interactions between rural residents in Alberta and nearby wind energy developments. In the absence of consolidated information about the actual, on-the-ground experience between wind energy projects and their surrounding landowners and rural dwellers, all interested parties are given to speculate about the impacts of wind turbines on nearby residents and the perspectives of these residents toward nearby wind energy projects. This speculation may be influenced by experiences recorded elsewhere by researchers or the media that may or may not resemble the way wind energy is developed and operated in Alberta.

The Pembina Institute conducts research and analysis in support of responsible renewable energy development, recognizing the environmental benefits of low-carbon electricity production in Alberta's grid, but also the need for responsible development and operation for the successful, sustained growth of non-emitting electricity generation in Alberta. This requires that non-emitting energy projects are carried out well and, to the greatest extent possible, with resident support. The first step is to understand what does and does not work well for nearby residents. To this end, the Pembina Institute has previously engaged with a number of communities, agricultural groups and other stakeholders to better understand, at least qualitatively, what has and has not worked well regarding wind energy developments in Alberta, and to find ways to mitigate challenges.

For example, in 2010, the Pembina Institute published the *Landowners' Guide to Wind Energy in Alberta*, the product of research into dealings between landowners and wind energy developers in Alberta. The guide's goal was to help landowners, municipal governments, agricultural organizations and wind companies to understand the development industry, regulatory dynamics, and the respective interests of these stakeholder groups, to help enable "win-win" projects. Subsequent projects furthered this work by engaging organizations representing rural Alberta around the *Landowners' Guide*, to initiate research to identify social and informational barriers

to wind energy in Alberta. This was carried out through many different types of interactions with a number of on-the-ground rural community organizations interested in the public dialogue around wind energy development.

This research is the next step in attempting to objectively quantify formally registered complaints to help understand their nature and volume and what can be done to address them going forward.

1.3 Research objective

To date, evidence to form conclusions about how wind energy development has proceeded in Alberta vis-à-vis landowner interests and acceptance has been largely anecdotal, including the Pembina Institute's informal conversations and engagement activities. No research has been undertaken to more comprehensively survey the interactions between wind energy projects and landowners. This research is an early step in filling this research and information void. The research takes a non-anecdotal, objective approach to documenting the existence of formal complaints made to the Alberta authorities most likely to receive complaints relating to wind energy.

The research first sought to identify the most likely places for nearby residents to bring official complaints. The focus of the research was on the operations phase of wind energy projects, though complaints related to the construction phase were also prompted and recorded. Because the nature of complaints varies widely, different complaints may be brought to different places. Concerns about wind energy projects have included human health concerns, noise complaints, concerns about decreased property values, livestock health concerns, and bird and bat impacts. Complaints and concerns are also made relating to the construction phase of wind energy projects — generally road usage and wear, as well as land impacts. The research sought to cover all of these different types of complaints by canvassing the authorities that would be most likely to receive these complaints.

Through conversations with individuals, governments, regulators and industry, the key places for general concerns were determined to be:

- the Alberta Utilities Commission (AUC), the arm's-length regulator for the electricity sector;
- operators of existing wind energy projects;
- municipalities (municipal districts and counties) where operating wind energy projects are located.

Setting the scope for this research, however, has been iterative. While interviewing respondents for this research, we also asked respondents who else would be most likely to receive complaints against wind energy projects. Through this approach, the research determined other authorities as likely loci for certain types of complaints:

- health-related complaints
 - local and provincial health authorities
- livestock complaints
 - beef industry association
 - municipal agricultural fieldmen

By covering these bases the research provided an indication of the volume and nature of complaints that have been made to official authorities in the province, including third-party authorities with no direct involvement with the wind energy sector. By keeping the research delimited to these discrete authorities, the research benefits from objectivity, balance and representativeness in the findings of recorded complaints, as opposed to the anecdotal and potentially cherry-picked input that would come from *ad hoc* conversations. Where possible, the research canvassed all or virtually all of the members of each type of authority — i.e., almost all of the wind energy operators in the province and all of the municipalities that play host to wind energy projects.

Also where possible, an appropriate comparator has been employed to test whether the institution in question is likely to receive complaints where negative interactions exist. For evidence about whether a certain authority or entity would be a locus for official complaints from rural residents, relevant authorities were asked about the volume and nature of complaints received related to other energy projects in the area, as a comparator for distributed installations of industrial development in rural Alberta, often in the same general regions as wind energy projects.

1.4 Research limitations

The research was not intended as a comprehensive pulse taking of rural attitudes toward or experience with wind energy. It did not comprehensively or directly ascertain the perspectives of all rural Albertans on wind energy development or document the presence or absence of concerns or complaints that nearby residents may have had. It relies solely on formal complaints from rural Albertans as indicators of their history of interaction with wind energy. In this way, the research is limited. It cannot prove, conclusively, that the experience of nearby rural Albertans with wind energy projects is positive or negative.

Instead, it provides a history of formal complaints made to what the research has determined to be the most likely forums. These complaints to official authorities provide some objective evidence of nearby landowners' actual experience with the existing, operating wind energy projects in the province. This methodology serves as a good litmus test for the intensity of concerns or impacts of wind energy facilities, as it assumes that persons experiencing or observing serious harm would make their concerns known. So while the research does not capture general attitudes towards wind, the approach may be particularly suited to identifying any serious or chronic complaints.

While additional work would be required to provide more specific conclusions (for example, exactly how many rural residents have concerns or complaints about wind energy projects), there are certain advantages to this research approach. Focusing on complaints made to relevant third-party institutions — and making use of their formal records — ensures that the data collected relates to formal, recorded complaints. It ensures a measure of consistency, credibility and clarity about the nature of the data collected while steering clear of broader conjecture or cherry-picking of narrative opinions according to the individual viewpoints of the interviewee.

1.5 Limitations on generalizations

It is important, also, to identify variations within the province and between wind energy projects. These variations may make it difficult to generalize about potential problems and issues with the wind energy industry.

Municipalities have different bylaws governing the development of wind energy and different arrangements or conditions with wind energy developments, particularly respecting construction phase issues and road maintenance. Wind energy developers and operators, meanwhile, also vary in their conduct and practices relating to, for example, construction activities and community engagement, though certain minimum practices are prescribed by provincial and municipal law, as well as International Organization for Standardization (ISO) requirements.

However, as more entrants have come into the Alberta electricity sector to develop and operate wind energy projects and as projects have spread to more municipalities, there is already considerable and increasing variation in these parameters within existing experience with operating wind energy projects. Municipal bylaws requiring setbacks from dwellings and property boundaries provide an important example. As Table 3 shows, these vary considerably between municipalities.

Table 3. Municipal setback bylaws for six wind energy host municipalities

Municipality	Current installed capacity (MW)	Setbacks from dwellings	Setbacks from external property boundary
MD of Pincher Creek	367	None	Total turbine height plus 10 per cent If noise to exceed 45 dBA, require an easement from the affected landowner that is approved by the Municipal Planning Commission and registered on the affected title.
MD of Willow Creek	281	2 x total turbine height	Total turbine height plus 10 per cent
Cardston County	37	1.5 x total turbine height	Total turbine height
Kneehill County	82	4 x total turbine height (for non-participating landowners)	Rotor arc > 7.6 m from vertical projection of property boundary
Wheatland County	88	2 x height of turbine tower	Rotor arc > 10 m from vertical projection of property boundary
County of Paintearth	150	2 x total turbine height	Rotor arc > 10 m from vertical projection of property boundary

Data source: Municipal land use bylaws⁸

⁸ MD of Pincher Creek Land Use Bylaw, Section 53; MD of Willow Creek Land Use Bylaw 1616, 145-148; Cardston County Land Use Bylaw 533/2008, 123-126; Kneehill County Bylaw 1509; Wheatland County Land Use Bylaw, 66-69; County of Paintearth Land Use Bylaw 593-09, 60-62.

Though the research here is presented as aggregated results, to preserve the anonymity of the data, this variation in setbacks, among other variations in municipal bylaws and policies, might go some way toward explaining whatever differences in levels of complaints exist between municipalities. Because the research presented here includes experience with wind energy operation in all of these municipalities, the research findings cover the entire cross-section of differences between municipalities that currently have operating wind energy.

Another potentially important difference exists between wind energy projects in the sizes of turbines. Projects included in this study include turbines as small as 150 kW and as large as 3 MW. While the wind energy projects with the largest turbines tend to be newer, Alberta's history with turbines over 1 MW goes back 11 years, as well as nearly six years for 2 MW or larger turbines and nearly four years for 3 MW turbines. In terms of Alberta's capacity-weighted operating longevity, over 60 per cent of Alberta's experience with wind energy is with turbines of 1.5 MW or higher rated capacity and over 10 per cent is with 3 MW turbines.⁹ There is considerable experience with the broad range of turbine sizes, so the research findings are broadly representative.

Therefore, while the experience of any one wind energy project or municipality cannot necessarily be generalized to other contexts, the aggregated findings presented in this research cover a cross-section of these potentially relevant parameters (setback requirements, turbine size, etc.) and can therefore be relevant to future projects falling within the existing range of diversity.

1.6 Research approach and findings

Because the research approach — including interview questions, information collected, and approach to contacting the authorities — and nature of the findings differ between the types of authorities covered, the research approach and findings are presented together for each authority in the following chapters.

⁹ Canadian Wind Energy Association, "List of Wind Farms."

2. Alberta Utilities Commission

The Alberta Utilities Commission (AUC) is the independent, quasi-judicial regulator for Alberta's utilities sector, including electricity generation and electricity markets, to "protect social, economic and environmental interests of Alberta where competitive market forces do not."¹⁰ In particular, with respect to wind energy development, "the AUC ensures that electric facilities are built, operated and decommissioned in an efficient and environmentally responsible way." The AUC issues permits and approvals for electricity generation projects, including wind energy, and has certain ongoing regulatory responsibilities for this sector.

In the course of the research, several different authorities pointed to the AUC as the likely locus for complaints related to operating wind energy projects, when asked an open question about which organizations would receive such complaints. These authorities included four municipalities, Alberta Health staff and a health inspector with Alberta Health Services. In fact, among the entire set of interviewees, more said that complaints would most likely be put to the AUC first than to any other potential locus for complaints.

2.1 Research approach

The AUC maintains records of all contacts (written, electronic, and telephone) that it receives, including complaints. It records information about the nature of the contact, among other information. Through correspondence and an interview with the AUC's Consumer Relations department, information was obtained related to the number of contacts received by the Energy Utilities Board and the AUC since 2000, the number of these that relate to wind energy, and the nature of those contacts.

Information was also obtained specifically around the number and nature of complaints received by the AUC related to "noise" concerns or issues regarding any activity, to provide an indication of the number and types of contacts the AUC receive related to this particular, potentially common concern, not only from wind energy but also other developments. Information was also requested around the volume and nature of contacts related to generation and transmission as a whole, as a comparator for the probing around wind energy, but the AUC's database of contacts did not enable effective collation of this data.

As a further comparison to better understand the propensity for the public to bring concerns related to energy developments to the relevant independent regulator, information was sought from the Energy Resources Conservation Board (ERCB) related to complaints received by the ERCB around oil and gas facilities and infrastructure in Alberta, subjects under the ERCB's regulatory jurisdiction.

¹⁰ Alberta Utilities Commission, "Who we are." <http://www.auc.ab.ca/about-the-auc/who-we-are/Pages/default.aspx>

2.2 Findings

2.2.1 Mechanisms for receiving and documenting complaints

The AUC was able to review the approximately 31,000 contacts from the public in its database, which represented all contacts received by the Energy Utilities Board (EUB) — the predecessor regulator for the AUC’s responsibilities — from 2000-2008 and by the AUC since its formation in 2008. Contacts, including what staff would characterize as complaints, were logged whether received by phone or in writing by e-mail or letter.

2.2.2 Complaints

Of these 31,000 contacts, 170 referenced wind energy. The AUC provided a breakdown of the nature of these 170 wind-related contacts and confirmed that any wind-related complaints received in these contacts would be identified in its analysis of the contacts.

Around 60 per cent (or 100 contacts) were individuals inquiring as to how to set up wind energy for themselves. Many were complaints about electricity bills by rural landowners, leading them to seek information about generating their own electricity instead, and referencing wind energy as a particular option.

Around 25 per cent (around 40 contacts) related to wind energy applications that were before the AUC at the time of the contact, as opposed to operating projects. Commonly, the nearby landowner had heard about the AUC’s regulatory review and wanted more information about the project application and the process for raising an objection. Similarly, another approximately 10 per cent (around 17) related to concerns or requests for information about proposed area wind projects for which the AUC had no record — the AUC assumed that the prospective development was in early (pre-consultation) stages of consideration, before official application to the AUC.

The rest (around a dozen contacts) related to miscellaneous issues, including a complaint related to the noise produced by a small-scale wind turbine that a municipality set up at a landfill site. However, the AUC found no complaint about an operating utility-scale wind energy project in the over 12 years of the 31,000 contacts.

In sum, among the 170 contacts related to wind energy:

- around 60 per cent were inquiries about how the contactor could acquire wind energy for him or herself
- around 35 per cent were inquiries or concerns related to wind energy developments at various stages of development
- one related to the noise of a single small-scale wind generator
- no contact was identified as a complaint about an operating utility-scale wind energy project

Among the 31,000 contacts, the AUC also found 45 contacts relating to noise. Among these 45, the AUC found:

- 14 related to non-wind electric utilities (generation plants, substations, transformers, plant operations)
- 20 related to facilities or installations outside of the AUC’s jurisdiction, including
 - 9 related to oil and gas operations (pump jacks, compressor stations, etc.)
 - 7 related to household issues (furnace noise and meter noise, for example)
 - 4 related to other non-AUC jurisdiction issues (unidentified noise issues, other industrial plants, water pumps)
- 5 for information about noise in general, often about policies and rules related to noise
- 3 related to wind energy facility proposals or applications
- 3 related to microgeneration installations (one of which was the small-scale wind turbine referenced above)

The AUC was clear that any contacts about wind turbines that included a complaint would have initially been referred to the project operator for resolution. Only if the complaint was not resolved between the parties would it continue to a complaint hearing. Both referrals and complaint hearings would have been included among the 31,000 contacts reviewed. However, there have been no complaint hearings nor even complaints referred to the operator — which, according to the commission, indicates that any complaints to operators must have been resolved to the complainants’ satisfaction. Overall, the AUC official interviewed indicated, “When you look at the volume of contacts we’ve received since 2000, we really don’t see complaints about wind farms.”

2.2.3 Other energy projects as comparator

Unfortunately, the AUC’s database of contacts did not allow for more precise information about the number and nature of complaints or concerns received related to specific types of power generation or infrastructure such as transmission lines.

The ERCB, the analogous regulatory body for non-electricity energy resource facilities, reports a much larger number of complaints related to oil and gas activities. When the ERCB receives complaints, which can include one or more “concerns”, it logs the complaint. It also categorizes concerns by activity type (wells, facilities, and pipelines), and by nature of the complaint (health, odours, operational impacts, and physical impacts). Unfortunately, the ERCB has not made publicly accessible collated data that provides more decision around the type of activity (for example, pump jacks within “wells”) or nature of complaint (for example, noise within “operational impacts”). This data is available, non-collated (by individual operation), for purchase from the ERCB. ERCB data was obtained for the five-year period between 2007 and 2011 inclusive and is reproduced in Table 4.

Table 4. Number of concerns reported to ERCB, 2007-2011

Type of Activity	Health	Odours	Operational Impacts	Physical Impacts	Total	Annual average
Wells	373	1,231	619	406	2,629	526
Facilities	143	415	450	161	1,169	234
Pipelines	36	69	72	119	296	59
Total	552	1,715	1,141	686	4,094	819
Annual Average	110	343	228	137	819	

Data source: ERCB Field Surveillance and Operations Branch¹¹

In summary, the data shows that:

- Over the five-year period between 2007 and 2011, the ERCB received on average more than 800 concerns per year related to wells, oil and gas facilities, and pipelines.
- Most concerns received relate to wells, averaging around 525 complaint/year. Facilities averaged 230 and pipelines averaged almost 60.
- The most common type of concern was about odours, making up on average 340 concerns per year (almost 250 from wells).
- Operational impacts — which include explosion, fire, flare, smoke, spill, uncontrolled flow, nuisance, noise, etc. — made up on average over 225 per year, fairly common with both wells and facilities.
- Health concerns drew between around 75 and 150 complaints each year (averaging over around 110), mostly from wells (75) and facilities (29).¹²

2.3 Summary

The AUC — the regulatory body governing both development and ongoing operation of wind energy in Alberta, as well as the authority most commonly suggested by interviewees as likely to receive any complaints — has not received a single complaint relating to a wind energy project. This is so despite receiving a large number of total contacts (31,000 over 12 years), including dozens of contacts related to wind and dozens referencing noise, including a contact about noise from a small-scale wind turbine. By comparison, the ERCB, the analogous regulatory body for the oil and gas industry, receives hundreds of concerns each year from oil and gas activities, including over 200 per year, on average, about operational impacts from the activities. It is important to note that there is far more oil and gas operations in the province than wind energy projects.

¹¹ ERCB Field Surveillance and Operations Branch, *Field Operations Provincial Summary 2011 (ST57-2012)*, <http://www.aer.ca/documents/sts/ST57-2012.pdf>

¹² ERCB Field Surveillance and Operations Branch, *Field Operations Provincial Summary 2011*

3. Wind energy operators

While a larger number of interviewees indicated that complaints would likely be brought to the AUC, many, including three municipalities, felt that they would go to the operators. Notably, the AUC itself indicated that complaints should first be brought to the operators and, indeed, any complaint brought to the AUC would first be directed to operators to attempt resolution. Only if the complaint is not resolved between the operator and the complainant would the AUC then take measures. Operators are therefore likely places for any complaints to be brought.

3.1 Research approach

Electricity generation ownership in Alberta is open to private investment. However, ownership is fairly consolidated, relative to some other deregulated jurisdictions. This is more or less true depending on the type of generation source. While the wind industry is increasingly seeing new entrants for generation ownership, fewer than a dozen owners actually operate Alberta's 30 existing wind energy projects, as of the end of 2012, as seen in Table 5. While some wind energy projects are jointly owned between two or more companies, Table 5 assigns the entire capacity of each such wind energy project to the owner that operates the project, as operators take the lead in receiving and responding to any complaints related to the project.

Table 5. Wind energy operators in Alberta

Operating Company	2012 Capacity		Capacity-weighted longevity	
	MW	% of total	MW-years	% of total
TransAlta	511.7	45.8%	3,658	68.2%
ENMAX	144.4	12.9%	817	15.2%
Capital Power	150	13.4%	37	0.7%
Suncor	88	7.9%	110	2.1%
NextEra	81.6	7.3%	184	3.4%
Enel	75.9	6.8%	63	1.2%
Acciona	60	5.4%	445	8.3%
Alberta Wind Energy	3.6	0.3%	22	0.4%
Optimist Wind Energy	0.9	0.1%	9.8	0.2%
Epcor/Peigan	0.9	0.1%	10	0.2%
Lundbreck Developments	0.6	0.1%	6.8	0.1%
Total	1117.6	100%	5,362	100.0%

Data source: CanWEA¹³

¹³ Canadian Wind Energy Association, "List of Wind Farms."

Of the 30 operating wind energy projects, however, five are operated by small operators, each with less than 4 MW of total operating capacity and a total of 6 MW for all five. By focusing on the other seven companies with the largest operating capacity in Alberta, the research captured 25 wind energy projects, including Alberta's 21 largest projects (all 20 projects over 5 MW and all 22 with more than two turbines). This accounts for 1,112 MW of Alberta's existing installed and operating capacity, or 99.5 per cent of Alberta's total. Moreover, substantial longevity is represented by these 25 wind energy projects, including over 5,300 MW-years of capacity-weighted operating longevity, again around 99.5 per cent of Alberta's total.

For each of these seven companies, information was gathered about the processes and mechanisms in place for nearby landowners to contact the operator about any concerns and complaints. Information was also gathered about the processes in place for receiving those contacts and recording or documenting them.

Next, appropriate contacts were asked for information about the volume and nature of complaints received related to the wind energy projects that the company operates. In some instances, staff had shorter experience in their positions than the wind energy projects under operation and, in a few instances, wind energy projects had changed operators; however, information was often available from prior to the staff's direct experience or the company's operation of a wind energy project, depending on the operator's records. In each case, it was made clear what time period the information covered.

Several categories were suggested for possible complaints received: health, noise, property values, livestock, birds/wildlife, construction, and "other". This was intended to ensure broad coverage of the types of concerns brought forward regarding wind energy projects, while leaving the door open for other noted concerns.

To encourage forthrightness and accuracy in responses, company staff were assured that reported data would be aggregated for publication so that the number and nature of complaints reported could not be assigned to individual projects or companies.

3.2 Findings

3.2.1 Mechanisms for receiving and documenting complaints

Every operator has undertaken a number of measures to ensure that nearby residents are aware that concerns and complaints can be brought to the operator and how to contact the operator:

- All noted regular direct communication with participating landowners, including face-to-face interaction with on-site staff.
- All had contact mechanisms available for non-participating residents (the general public) to contact the operator:
 - All seven had on-site employee(s) in the community with contact info and/or local office to visit in-person.
 - All seven had webpages available with appropriate contact info, including toll-free telephone numbers in most instances.

- All seven also had some mechanism in place for informing the general public about means of contact regarding specific projects:
 - All seven had contact information in materials disseminated during planning and permitting phases and at open-house events.
 - At least two had contact numbers posted on and around the buildings and wind energy project.

Every operator under the research coverage also had mechanisms in place for documenting or logging any complaints that are received. All seven had records for any complaints received from construction and from the beginning of operations. In each case, the log or documentation included, among other information, the nature of the complaint and whether and how it was resolved, as well as the wind energy project at issue and the date of contact.

3.2.2 Complaints

Construction

Most companies were able to provide information on construction-related inquiries or complaints for all of their wind energy projects. However, three companies were not able to speak to the construction phases of some projects, such as the oldest projects. Still, the records surveyed covered over 90 per cent of Alberta's installed wind capacity.

Five of the seven companies reported some complaints received directly from residents during construction. Four companies noted complaints received from participating landowners — i.e., landowners with whom the company has contractual relationships. These generally related to land impacts (mixing soil with clay, access during operations, dust problems for homes, garbage and materials left in fields, and leaving gates open). These varied in frequency between companies and projects:

- One company noted one such complaint.
- Three companies each noted around a half dozen such complaints.

Three companies noted complaints received directly from non-participating landowners:

- One company noted one complaint received about dust during a dry period, which was remedied by bringing a water truck to the construction location.
- One company noted a single complaint about the speed of construction vehicles on public roads during construction.
- One company noted several complaints related to damage to roads, the need for road maintenance and gravel spreading off the road and into the fields.

Operations

For all companies except one, the staff member contacted spoke to records maintained for the entire period of operation of the wind energy projects; for the remaining company, the staff member spoke only to the most recent two years of direct experience. The total capacity-weighted operating longevity of the research still covered 90 per cent of Alberta's experience with operating wind energy projects.

Under this research coverage, the total number of complaints received during operation, including any repeated complaints from the same complainant, was 10, with some variation between companies. The following is greater detail about the number for each company (in no particular order) and some information about the nature and handling of the complaints.

1. One company noted no complaints since operation.
2. One noted a single noise complaint. In this circumstance a noise study was conducted, which found that the complainant's irrigation pump was drowning out other noises, including turbines. The company nevertheless resolved the complaint with noise remediation measures for the wind turbines, including noise blankets and baffling.
3. One noted a single complainant making generalized statements about "damage to the community" and "government exploitation" from a resident living more than five kilometers from the turbines.
4. One noted a single complaint related to unusual noise, which was investigated; the noise did not repeat.
5. One noted a single noise complaint by a non-participating landowner. A noise study was conducted that determined that the sound was below noise limits, and the complainant is content with the results of the study, so the complaint has been considered resolved.
6. One company noted that one project has received three complaints, each two years apart, from the same resident listing unfocused complaints, broadly about noise, change in wildlife and shadow flicker. Two other complaints were about unusual noise from the turbines, which were resolved as mechanical issues.
7. One company noted one complaint about safety lights on the turbines required by federal transportation law. This complaint only arose at a local public permitting process for a subsequent wind energy project, where the complainant raised the concern about the safety lights on a nearby operating wind energy project, which the company operated.

This total represents eight unique complaints (with one complaint repeated twice by the same complainant), including three unresolved complaints, which can be categorized as follows:

- Five complaints related to noise and have been resolved.
- Two complainants have brought broad, generalized complaints against wind energy projects, which have not been resolved.
- One complaint about required safety lights on the turbines was not resolved, though the safety lights are required by federal law.

No complaint was recorded relating to livestock health and the only complaint explicitly relating to human health was one of the resolved noise complaints, which indicated interference with sleep.

3.3 Summary

The operation of wind energy projects in Alberta has not attracted many complaints. In total, there were only a few concrete or specific complaints about wind energy projects from the operations covered by the research (90 per cent of Alberta's total wind energy operating experience): five were resolved noise complaints; and one was a complaint about navigation lights required by transportation regulations. One other complaint related to more generalized

complaints about wind energy (complaining of, for example, “damage to the community”, “government exploitation”) and another listed unfocused, broad complaints and was repeated twice. Some wind energy developments have attracted more considerable complaints at construction phase with impacts of construction equipment and traffic, though this varied between projects. These complaints were often with participating landowners, with whom the wind energy company has a contractual relationship, and several concerned issues that are often the subject of agreements with the relevant municipality, such as road maintenance.

4. Municipalities

Some companies indicated that complaints would be likely to go to the relevant municipal district or county, given the proximity of this level of government to the community itself. Moreover, several of the interviewees (municipal staff) contacted in this research indicated confidence that problems relating to wind energy would come to their attention due to their status and position in the community. Most, however, indicated that complaints would most likely go to the company and/or the AUC and, indeed, the municipality itself would send serious complaints to these authorities.

4.1 Research approach

As detailed in section 1.1, wind energy projects in Alberta have historically been concentrated in the southern parts of the province and, initially, particularly in the southwest. Only four municipalities have more than three years of experience with wind energy. Recent developments have brought more diversity to the geographic regions in which wind energy has developed or is under development — in particular, further east in the south and then gradually north into east-central Alberta. Still, at present only seven municipalities have all of Alberta’s operating wind energy projects, missing only the single utility-scale turbine on the Peigan Reserve. By collecting information from seven municipalities, it was possible to cover 1,117 MW (99.9 per cent) of operating wind energy capacity in Alberta, including 5,350 MW-years of capacity-weighted operating life (99.8 per cent).

Table 6. Wind energy capacity and experience by rural municipality

Municipality	# of energy projects	Year of first multiple-turbine project	2012 Capacity (MW)	% of total in Alberta	Capacity-weighted longevity (MW-years)	% of total in Alberta
MD of Pincher Creek	16	1993	367.14	33%	2474	46%
MD of Willow Creek	5	2003	281.4	25%	1569	29%
MD of Taber	2	2006	111.4	10%	638	12%
Cardston County	3	1998	37.16	3%	340	6%
Kneehill County	1	2010	81.6	7%	184	3%
Wheatland County	1	2011	88	8%	110	2%
County of Paintearth	1	2012	150	13%	37	1%
Total	29		1116.7	100%	5352	100%

Data source: CanWEA¹⁴

¹⁴ Canadian Wind Energy Association, “List of Wind Farms.”

Municipalities were initially engaged to determine the appropriate contact person or persons who could speak to any complaints that would have been received by the municipality. In all cases, ultimate interviewees confirmed that they would hear about any and all complaints brought to the municipality regarding utility-scale wind turbines in the municipality. These contacts were generally municipal chief administrative officers (CAOs), development officers or heads of relevant departments (planning, infrastructure, development), and one administrative staff member from the municipality's operations department.

Contacts were asked to confirm the time periods to which they could speak about direct experience with receiving official complaints in their capacities with their municipal offices. In some instances, staff had shorter timespans in their positions than the wind energy projects under operation, but had access to the experiences of other staff members if records were kept or if they could speak to those staff members with previous experience. Through these routes, sometimes involving several staff members, the entire time period of the operations of wind energy projects noted above was covered in the research.

Interviewees were first asked whether they had processes in place for receiving complaints related to wind energy and, if so, to describe their processes. They were also asked how such complaints would be addressed, whether people would tend to bring formal complaints to the municipal office and where else people in the community would likely bring their complaints. Finally, appropriate contacts were asked for information about the volume and nature of complaints received related to the wind energy projects in the municipality. As with the company interviews, so as to prompt staff to think broadly about the potential types of complaints, but not to limit the types of complaints reported, several categories of complaints were suggested as possible complaints received: health, noise, property values, livestock, birds/wildlife, construction, and "other".

To encourage forthrightness and accuracy in responses, staff were assured that reported data would be aggregated for publication so that the number and nature of complaints reported could not be assigned to particular municipalities, individuals, companies or wind energy projects.

4.2 Findings

4.2.1 Mechanisms for receiving and documenting complaints

Unanimously, all municipalities indicated that they do not have a specific system in place for receiving complaints related to wind energy projects. In every case, staff indicated that this is because they have not received complaints with sufficient frequency to feel the need to have a formalized process for receiving them, responding to them and recording them.

Staff indicated that the municipality would receive any such complaints as they would receive any communication, and assign them to the appropriate departments. Most noted that any complaints would be taken very seriously. In some cases, the municipality would investigate independently and seek solutions, but in every case the complaint would be referred to the AUC and/or the operator.

4.2.2 Complaints

In most cases, municipalities noted that considerable levels of concerns were seen during the permitting and approvals phases of wind energy project developments; this is when they receive the most direct communications and contacts related to wind energy. However, this research is focused on actual experience with wind energy developments once operational, as well as construction concerns, so questions were geared toward these two phases.

Construction

The number and nature of complaints received during construction vary broadly from project to project. Every municipality except one indicated some complaints received during construction, as documented below. Two municipalities did not note construction-phase complaints, but the contact for one of these could not say with confidence that they would have been made aware of complaints during this phase.

- One municipality with one wind energy project noted several calls per day when trucks hauled gravel to the construction location with issues related to property damage, debris and gravel, traffic obstruction and construction necessary to widen intersections. The same municipality noted complaints daily or weekly during other phases of construction, particularly when weather was dry, prompting dust complaints.
- Another municipality with one wind energy project noted very similar types of complaints, but not as frequent — only around a dozen in total.
- One municipality noted five complaints about road damage, road construction and drainage issues and land access problems.
- Two municipalities (one with only one wind energy project and one with over 100 MW of capacity) noted very few construction complaints (a couple in each municipality), commenting on the good conduct of the developers in maintaining roads well and following guidelines.

Operations

Among all of the municipalities and the broad near-comprehensive coverage of wind energy projects and their operating lives, there have been three complaints related to the actual operations of wind turbines, divided between only two of the rural municipalities. The nature of the complaints is described below.

- One related to a concern about ice throw. The municipality sent emergency services staff to investigate and found nothing to indicate a current problem. The municipal staff member noted that the individual making the complaint is a common complainant about various issues in the community.
- One complaint indicated that the density of wind turbines in the region offered a terrorism opportunity. The municipal staff member noted that this individual had been opposed to the wind energy projects at development phase.
- One complaint related to noise, which was referred to the relevant wind energy project's operator.

Aside from these three contacts, municipalities indicated that they received no complaints in their official capacities as municipal staff members related to the operation of wind energy projects in their jurisdictions.

4.2.3 Other energy projects as comparator

Most municipalities also reported receiving few or infrequent complaints related to operating oil and gas projects (though a few noted hearing considerable concerns about future developments and developments under construction). Four municipalities noted having received some complaints related to oil and gas operations:

- One noted a single complaint about noise from a pumpjack at a neighbouring property, which was solved by a noise barrier.
- One noted about one to two complaints per year about oil and gas projects.
- One noted infrequent but more than a few complaints about compressor stations posing various nuisances for nearby landowners.
- One noted a single complaint about a gas compressor station, related to water run-off and snow drifting.

Overall, however, all municipalities indicated that such complaints were not frequent. This may indicate that rural municipalities are not likely loci for residents to bring complaints regarding nearby, stationary industrial activities in general. This is consistent with indications we received that residents are more likely to contact the authorities already discussed: the relevant regulator (AUC or ERCB) or the operator. However, some municipal staff speculated, instead, that residents are generally comfortable with energy projects, including pipelines and oil and gas, having a history of experience with these projects.

4.3 Summary

There was substantial variation between municipalities about the frequency of complaints during construction phase, with some municipalities noting considerable frequency about particular projects. This speaks to the tendency for major construction projects to cause some nuisance and annoyance to nearby residents, with respect to both road use and damage as well as debris and dust. However, the variation suggests that measures may be available to both municipalities and wind energy developers and their contractors that can mitigate these disturbances during construction phase. The relative paucity of complaints during the operations phase, after the more considerable complaints brought to municipalities about the same wind energy projects during construction phase, indicates that few serious complaints exist with respect to the operations of wind energy projects or, at least, that residents do not bring them to municipal officials.

5. Health

Staff with two municipalities and one company indicated that health authorities might be recipients of complaints toward wind energy companies that relate to human health. Some health field professionals agreed that human health problems relating to wind energy might come to their attention, though there was no consensus on the topic, and many agreed that the AUC would be the appropriate complaint recipient to survey.

5.1 Research approach

Information was sought from several departments of Alberta Health and Alberta Health Services, which provided a coordinated response, arranged by Alberta Health's Data Access department. They indicated that physicians do have a place to enter causes for the problems that patients present with, but that these are not commonly filled in and it is possible that doctors will not record the cause that the patient believes. The coded data submitted by physicians (from clinics, hospitals or emergency visits) would be unlikely to include environmental exposure factors specific enough to identify wind turbines (rather, the code would only indicate, for example, "noise", and even then, this code is seldom used (132 times in 10 years out of 125 million diagnosis codes, and none indicate a tie to wind turbines (nor would they, as such a complaint would require time to confirm)). As such, the administrative/clinical data holdings at Alberta Health would not support the research.

Alberta Health indicated, however, that experiences responding to complaints and issues related to wind turbines would be encountered by health inspectors at Alberta Health Services. Two Alberta Health Services health inspectors in two of the municipalities with the most experience with wind energy in Alberta, each covering their entire municipality, were interviewed. The direct experience in their respective fields amounted to a combined experience of 12 years in their regions, together representing 53 per cent of the capacity-weighted longevity of experience with wind energy in Alberta.

They were asked about whether they would hear of health concerns related to wind turbines in the region and whether they have a sense of whether people would complain to them. They were also asked about the number and nature of complaints they have received in their official capacities related to wind energy in their regions.

5.2 Findings

5.2.1 Mechanisms for receiving and documenting complaints

Both health inspectors indicated that if people brought a health complaint related to a wind turbine to Alberta Health Services, that complaint would be brought to them. Both indicated that they live in the community and that it would be their responsibility to investigate such an environmental health impact.

However, there was some disagreement between the health inspectors about the likelihood of whether people would bring complaints to the health system in the first place. One felt that complaints would go, instead, directly to the AUC. The other felt that health concerns are more likely to be brought to a community health inspector, particularly given the position's proximity to the community and interaction with community members.

5.2.2 Complaints

Neither health inspector has ever encountered a complaint related to a wind turbine in their work.

5.2.3 Other energy projects as comparator

One of the health inspectors noted receiving formal complaints about sour gas smells from oil and gas facilities in the community around two or three times per year. Complaints about groundwater quality impacted by oil and gas facilities were encountered on a similar frequency by the same inspector, received both directly and through Health Link or the nearest Community Health Centre.

5.3 Summary

It was not clear from the research whether health complaints related to wind energy would be presented to community health inspectors. In any case, between the two inspectors contacted, representing more than half of Alberta's capacity-weighted longevity of operating experience with wind energy projects, neither has received a complaint, whereas oil and gas complaints have been received. Moreover, contacts approached in the health field indicated the AUC as a likely locus for any complaints; the AUC is also covered in this research (see section 2).

6. Livestock

Finally, a particular concern that has been registered or alleged against wind turbines has been impacts on livestock. While it might be valuable to engage in direct interviews with livestock farmers to canvass for concerns, the research is limited, instead, to possible recipients of official complaints, as aggregators of complaints across regions or across the province. As with the rest of this research, this avoids the bias or non-representativeness of anecdote and selected direct interaction with particular community members.

6.1 Research approach

The research focus was on cattle interactions, as anecdotal evidence indicated that this is the predominant livestock raised near wind energy projects. Information was collected from the industry association for beef producers, the Alberta Beef Producers.

Information was also collected, where possible, from agricultural fieldmen. Agricultural fieldmen “develop, implement, and control programs designed to carry out priorities and policies set by the Agricultural Service Board” in each rural municipality.¹⁵ They engage in education and awareness and are also inspectors and regulatory officers for certain provincial rural and agricultural statutes within their boundaries (generally, municipal districts and counties). Five agricultural fieldmen were successfully contacted for this research, representing 968 MW (86.7 per cent) of Alberta’s generation capacity. The fieldmen’s longevity in their positions enabled them to speak to almost 3,300 MW-years (61.4 per cent) of Alberta’s capacity-weighted operating longevity.

6.2 Findings

6.2.1 Complaints

The Alberta Beef Producers (ABP) indicated that reports of livestock health issues related to industrial activities are quite rare. As such, they do not keep formal records of reports that they receive. While there are periodically reports from concerned producers, usually related to oil and gas wells, they are only sporadic and isolated. A staff member with nearly two years of work experience with ABP was not aware of any complaints related to wind energy at least since that time and was able to speak to colleagues with longer experience, but none were aware of complaints.

None of the five agricultural fieldmen contacted had any experience with complaints or reports of livestock impacts related to wind energy. There was some inconsistency in whether complaints would be brought directly to the agricultural fieldman from livestock farmers or whether the agricultural fieldman would receive the information indirectly, but there was general

¹⁵ Association of Alberta Agricultural Fieldmen, “About the Association of Alberta Agricultural Fieldmen.” <http://www.aaaf.ab.ca/component/content/article/284-about-the-association-of-alberta-agricultural-fieldmen.html>

agreement that the fieldman would hear about any issues relating to livestock impacts from wind energy.

One of these agricultural fieldmen who had never heard a complaint in a region with substantial experience with wind energy projects stated: *“I have spoken with farmers about the windmills and this issue, and they look at me like I’m a bit crazy. ... My own observations are that the cows graze happily around the windmills no matter what the wind conditions, and there is no noticeable difference in grazing pressures around the windmills themselves and the rest of the pasture.”* This agricultural fieldman noted not having discussed this with dairy farmers in particular, speculating that their experience could differ.

6.3 Summary

Between both the industrial association for cattle producers in Alberta and five agricultural fieldmen able to speak to over 60 per cent of the capacity operating experience in Alberta, there was no complaint reported relating to livestock impacts from wind energy.

7. Conclusions

Alberta has substantial experience with wind energy as an early Canadian leader in wind energy development. Over the province's 20-year history with wind energy, more and more rural Albertans have come into closer contact with wind energy, as have their homes, agricultural operations and communities.

This research has extensively covered the likely authorities where rural Albertans would go to make formal complaints about wind energy projects. Some projects have attracted considerable attention, including concerns and sometimes opposition, at the permitting phase; concerns were brought to the AUC, the operators themselves and the host municipalities. Moreover, some wind energy developments attracted fairly regular complaints to municipalities and wind energy developers during construction, related to road and land impacts, mostly by participating landowners.

However, across all of these authorities, very few complaints about wind-energy operations have been registered. Some authorities, most notably the AUC — where many stakeholders thought complaints would be brought, if anywhere — have received no complaints relating to the operation of utility-scale wind energy projects. Some, particularly wind energy operators themselves, have registered a handful of concrete, tangible complaints, most of which were noise concerns that have been resolved. Where those noise complaints were due to abnormal turbine operations, mechanical solutions have been readily available, so that altogether across all authorities surveyed, the number of noise complaints have not indicated a systemic problem with wind energy developments in Alberta. Overall, complaints to any authorities have been very infrequent and measurably fewer than have been received relating to analogous energy activities such as oil and gas operations. The results of the research indicate that as wind energy has integrated into the agricultural and energy development fabric in rural Alberta, this has not prompted any notable volume of serious or concerning complaints.

Though this research did not look into attitudes held by rural Albertans toward wind energy in a comprehensive sense (as, for example, with polling or focus groups), the results align with recent research at the University of Western Ontario. Through a quantitative survey of two rural Ontario communities — a case community living with turbines close by and a nearby control community without turbines but with a wind energy project in early phases of planning at the time of the polling — researchers found that residents in the control community are least supportive of wind energy development and “most concerned about all categories of potential impacts”.¹⁶ They noted that this aligns with previous research in the U.K. While the results presented here arise from a different research method and are therefore not simply replications in the Alberta context, the finding that the operators, municipality and regulator receive more concerns at permitting and approvals processes than during operation is broadly in agreement with this case-control quantitative survey study.

¹⁶ Jamie Baxter, Rakhee Morzaria and Rachel Hirsch, “A case-control study of support/opposition to wind turbines: Perceptions of health risk, economic benefits, and community conflict,” *Energy Policy* (2013), <http://dx.doi.org/10.1016/j.enpol.2013.06.050i>.

More research would be valuable to determine if other friction points have arisen that have not resulted in formal complaints captured in this research and what mitigations or best practices have worked and/or could be implemented. But the evidence gained from this research indicates that there is no pressing concern in wind-rural interactions in the Alberta context that would warrant obstruction or restriction of continued growth in wind energy in Alberta, so long as new developments are well regulated and continue to follow good practices in development, including setback requirements and limitations that have been in place.

At the same time, given that the research found considerable construction-phase complaints, particularly for some projects, there may be opportunities for improving and better standardizing construction practices and agreements between municipal governments and developers. More research on this score could help to determine best practices from case studies.