

Journal of Rural and Community Development

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Authors: Amanda D. Boyd & Travis B. Paveglio

Citation:

Boyd, A. D. & Paveglio, T. B. (2015). “Placing” energy development in a local context: Exploring the origins of rural community perspectives. *The Journal of Rural and Community Development*, 10(2), 1-20.

Publisher:

Rural Development Institute, Brandon University.

Editor:

Dr. Doug Ramsey



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“Placing” Energy Development in a Local Context: Exploring the Origins of Rural Community Perspectives

Amanda D. Boyd*
Washington State University
Pullman, Washington, USA
amanda.boyd@wsu.edu

Travis B. Paveglio
University of Idaho
Moscow, Idaho, USA
tpaveglio@uidaho.edu

*Corresponding Author

Abstract

There is a growing need for sustainable energy development to meet domestic and international demand for electricity and fuel generation. A critical component in energy systems development is support from the public, particularly the acceptance of these technologies among local populations. The goal of this study is to examine how locally affected populations view energy developments, especially with regard to community and place (ties to the area and local relationships). In-depth, face-to-face interviews and community observation were employed to better understand how residents in a rural Canadian community perceive of potential energy development in their locale. Our findings demonstrate that the unique combinations of local characteristics across rural communities are likely to have a bearing on the support for or opposition to energy development in those areas. Residents' perceptions of energy systems are influenced by the intersection of local values, community relationships and place attachment. We present a framework of the intersecting factors that influenced community perceptions in the study location and discuss how the framework can be used to better anticipate and understand the origins of rural community perspectives of energy development.

Keywords: risk perceptions; energy; community; communication; place

1.0 Introduction

A critical factor in energy systems development is support from the public, particularly the acceptance among populations located where these technologies are proposed or currently operating. Successful implementation of energy systems at a local level requires an understanding of many technical and social factors. Researchers and policy makers have increasingly recognized that technological change is shaped by the social context in which a development is designed and used. Such views reject the notion of technological determinism, in other words, the view that technology develops solely in response to hazards or supply needs and is

unmediated by any other social influences specific to the society or local culture where it is developed (Winner, 1986). Instead, previous research shows that the success of a particular technology is based on technical, economic, organizational, political and cultural elements (Wajcman, 2002). Often these elements are tied to the specific locality in which people live and described through the concept of 'place.' Therefore, technological and risk assessments must be considered within the current political, cultural and social contexts in which they occur (Wüstenhagen, Wolsink, & Bürer, 2007). Examining how energy systems are accepted by society, including how controversial technologies are shaped and accepted by the public, provides a more comprehensive way to understand the success of energy development when compared to consideration of purely technical processes that inform policy making (Bijker & Hughes, 1987). For the above reasons the main goals of this manuscript are: (1) to examine rural residents' views of local energy systems development; and (2) to examine how locally affected populations view energy developments especially with regard to 'place' and 'community' (ties to the area and local relationships).

This research examines perceptions of energy development in a rural community located in Alberta, Canada. We employ and adapt an existing approach for understanding how local community context influences residents' views or approaches to change and explore its use in studies of energy system development. This approach takes its basis from rural sociological theories that outline how unique, place-based elements of local social context, including historic relationships with the landscape, are an important influence on community views surrounding risk. The community examined in this study has experienced historical controversy over energy developments in the area, including natural gas extraction, nuclear power, and a hydroelectric project. This case study provides insights into residents' views towards energy systems development and the factors that related to community members acceptance of or opposition to projects located in the region.

2.0 Perceptions of Energy Systems

Risk perception researchers have begun to shift their focus from examining deliberate, conscious and mechanistic methods of probabilities and payoffs with regard to risk. The emerging paradigm in risk perception research is one that takes into greater account the variety of social contexts that shape risk and the variation in perceptions among individuals and groups (Gurabardhi, Gutteling, & Kuttschreuter, 2005). More specifically, researchers have shifted from purely cognitive approaches of risk perception by integrating approaches that better take into account social and cultural influences (Douglas & Wildavsky, 1983; Slovic & Peters, 2006). Integration of cognitive and social influences on risk is particularly important to the study of those who live in areas located near such risks. Locals not only take into account the physical hazards associated with energy development facilities, but also the potential economic losses (e.g. though loss of tourism) (Flynn, Burns, Mertz, & Slovic, 1992), breakdowns of social networks (Unger & Wandersman, 1985; Wakefield & Elliott, 2000) and feelings of stigma associated with being located near a project (Masuda & Garvin, 2006).

Public opinion can factor into successful introduction or development of any controversial technology, and this is especially true of energy systems (O'Hare, Bacow, & Sanderson, 1983). For that reason, a growing number of studies focus on social acceptance of energy development and the variety of ways that local people

react to siting of energy systems near the places they live (for recent review, see Fast, 2013). Social science researchers have found that public opposition was and continues to be a factor in the decline of new nuclear power reactors and was a factor in the 1990's-era moratorium on offshore drilling along many coastal areas in the United States (Smith, 2002). A lack of community support for technological development can slow or stop the implementation of that technology (Rosa & Dunlap, 1994).

Many factors affect how the public perceives risks. Research on expressed preferences demonstrate that factors such as residents' familiarity with, perceived control over, and level of knowledge concerning a risk can all influence the relationship between perceived benefit and risk acceptance (Slovic, 1987). These factors "play a large role in determining levels of concern, worry, anger, anxiety, fear, hostility, and outrage, which in turn can significantly change attitudes and behavior" (Covello, Peters, Wojtecki, & Hyde, 2001, p. 384).

Other research has examined the factors that influence public support of energy development and impacts of those developments on social systems. Impact to local communities is a function of biophysical, social and economic factors (Freudenberg & Gramling, 1992). Impacts to social systems can occur in response to community changes or as interest groups mobilize their resources in an attempt to promote or oppose a development. For example, residents in an Australian community were concerned about a wind farm development proposal partly because they were concerned about maintaining social well-being among residents (Gross, 2007).

Economic opportunities and detriments can both be outcomes of technological development. Opportunities could include increased jobs, business revenue or tourism. Benefits or detriments from energy development may be variable based on the proximity of individuals or groups to the siting. These outcomes may also be contingent on the occupation or lifestyle of the residents in question (Bristow, Cowell, & Munday, 2012). Negative aspects could include a decrease in real estate values. Undesirable developments can also stigmatize the community (in the eyes of the community members or outside populations). Likewise a development may be opposed if it could potentially detract from future economic growth, as was the case among wine producers in France who opposed wind energy development on the basis that it would lower tourism sales (Joubert, Laborgne, & Mimer, 2007).

Alteration of the physical environment associated with energy development may have significant effects on nearby communities. Examples of alterations can include the deployment of technology, development of transportation systems, storage of hazardous materials, or renovations of facilities. Likewise, opposition or concern can be an expression of the desire to preserve shared places, spaces, and interactions that are valued by community members (Devine-Wright, 2005; 2009). Studies of local support for technological developments emphasize the importance of resident trust in developers, meaningful community engagement and fairness in procedures used to determine the site (i.e. 'siting' of a facility) (Wüstenhagen et al., 2007). Other social beliefs can factor into perceptions of energy development such as perceived positive and negative changes to the environment, and the desire to reduce the amount of industrial change or development occurring to a region (Groth & Vogt, 2014). These factors demonstrate the complexities that can shape risk perceptions and support for or opposition to energy developments.

While there have been many perception studies focused on residents' views of 'risky' technological developments, a gap still exists in the risk communication and perception literature regarding the role of "community" and "sense of place" in the shaping of such perceptions (Bristow et al., 2012; Flint & Luloff, 2005). What literature does exist on these phenomena, and from other literatures such as rural sociology or human geography, indicate they are important in shaping support or opposition for energy development. For that reason our next section introduces a theoretical approach that recognizes the importance of community and sense of place in residents' views of local change.

3.0 Place Identity and Community: Applications to Energy Development

Not all community systems are affected by developments in the same way. The factors influencing support of energy developments or other risks may vary across cases and may be influenced by characteristics specific to a locality and the social systems that continue to evolve there.

Paveglio et al. (2009; 2010; 2012; 2014) recently used a systematic approach to documenting the local characteristics that most influence community views and actions surrounding wildfire risk. Their approach situates characteristics of local context, all identified in previous literature as potentially influencing diverse communities' views of wildfire management and mitigations, within a larger conceptual framework of four categories. The four conceptual categories of Paveglio et al.'s framework (2009; 2012) include: (1) residents' knowledge of the local ecosystem and experience (place-based knowledge); (2) access and ability to adapt scientific/technical information to a local context; (3) demographic (e.g., median income, age and ethnicity) and structural characteristics (e.g., road infrastructure, building materials and access to resources); and (4) interactions and relationships within the community that support (or fail to support) perceptions of the risk. The process by which they systematically document rural community context and its influence on a risk provides a means to think about how local social dynamics influence other community risks such as energy development.

Paveglio et al.'s (2009; 2014) efforts draw their theoretical base from the interactional approach to community, a rural sociology perspective which focuses on the way various social dynamics, local history and culture, and regional setting collectively form the social context (i.e. community) that influences collective approaches to risk (Flint, Luloff, & Finley, 2008; Wilkinson, 1991). That perspective shares much in common with classic risk literature outlining how risk perceptions are partially shaped by the interactions and interrelationships people have with one another (Douglas et al., 1983).

According to Wilkinson, community *emerges* from communication and interaction among people who care about each other and the place they live (Flint et al., 2005). His conceptualization is best understood as a process that is: (1) created by various social actors who interact frequently across interest lines to solve common problems, (2) rooted in a particular locale that social actors imbue with meaning, and (3) defined by various social networks and interpersonal relationships that are agreed upon and valued by participants (Flint, Luloff, & Theodori, 2010; Paveglio et al., 2012). Community is not necessarily tied to any geographic or jurisdictional

boundaries of local government, and can include regional interactions in rural landscapes (Flint et al., 2010).

Social context is partially defined by local peoples' historic and ongoing relationships with the landscape (e.g. resource extraction, amenity migration) and its biophysical properties (Flint et al., 2008). This is consistent with notions of place attachment, which refers to the positive affective bonds that people associate with a specific place and are based upon the interactions they have in that location (Masuda et al., 2006). Bell, Gray, Haggett, and Swaffield (2014) has referred to the term 'place protector' as an attitude towards energy development—a term derived from the work on place attachment. A person who is a 'place-protector' may not oppose local development for reasons of self-interest, instead they may oppose a local development because of the *value* they see in that particular place while not seeing the same value, or remaining agnostic on the value, of other places where developments may be proposed.

In this research we begin from the premise that in order to understand community perceptions of a risk, researchers must first characterize the local characteristics that define collective life in a locality, including how people communicate and relate to one another to modify or uphold local culture (Wilkinson, 1991; Luloff & Krannich, 2002). This is because a more holistic understanding of local context, and the potential modification of that context through energy development, will better help explain resident views on that topic when compared to their perception of particular energy systems. We attempt to situate those local characteristics in the broad conceptual categories outlined by Paveglio et al. (2009) and modify them given the realities of potential community impacts from energy development. The argument is that an expanded focus on the concepts of community and place attachment in risk research provides a more comprehensive approach to examining perceptions and broader societal trends regarding support for or opposition to technological developments.

4.0 Community Profile

Fairview is a town in northwestern Alberta, Canada. The Town of Fairview has a population of 3,297 and the Municipal District (MD) has 1,432 residents (Statistics Canada, 2011)¹. The majority of Fairview residents have lived in the area for three or more generations. Approximately 68.4% (n=1,740) of Fairview residents identified as third-generation residents and 6.1% (n=155) identified as first-generation residents. Approximately 71% percent (n=775) of MD residents identified as third-generation residents and 3.7% (n=40) identified as first-generation residents.

Fairview residents have lower levels of educational attainment when compared to the rest of the Alberta population. Approximately 35% of residents in both the MD and Town of Fairview had not completed any certificate, diploma or degree while 23% of Albertans had. The Fairview area also contains a smaller proportion of

¹ The Town of Fairview has 3,297 residents and the MD has 1,432 residents. However, demographic statistics, including employment, education, and the number of generations that have lived in an area, are reported only for those aged 15 and older. The population that is 15 and older for the Town of Fairview is 2,545 and MD of Fairview is 1,090 (Statistics Canada, 2011).

people who have completed a university certificate (7% in both the MD and Town of Fairview compared to 17% of Albertans).

Major industries in the Fairview area include natural gas extraction and agriculture. Approximately 21% of residents in the Town of Fairview and 40% of residents in the municipality work in 'agriculture and resource-based industries' compared to 12% of the Albertan population. The unemployment rate for the Town of Fairview was 6.1%, which is slightly higher than the provincial average of 4.3%. The unemployment rate for the MD was slightly lower at 3.1%. The average family income in the Town of Fairview is \$76,081, which is slightly higher than the provincial average. The average family income for the MD of Fairview was \$61,163.

4.1 History of Gas Extraction and Other Energy Developments in the Area

Fairview has many resources for energy development, including large natural gas reserves (referred to as the Dunvegan Natural Gas Field) and a river suitable for the construction of hydroelectric projects. Large natural gas fields south of Fairview provide employment opportunities for many in the area. Hydroelectric projects have been discussed in the area. The community was also involved in the North Peace nuclear power debate, which concerned a proposal to build a power plant 50 km (31 miles) northeast of Fairview. Discussions with residents about these potential and realized energy system developments were used to understand how characteristics of local social context influenced resident perceptions and decisions about energy developments in their area.

The Dunvegan Natural Gas Field was discovered on September 19, 1970. It is reported that the "vast Dunvegan field was one of the largest findings in Alberta gas history" (Canadian Petroleum, 2010). The Dunvegan field has produced more than 1 trillion cubic feet of gas and is expected to remain productive for years to come (University of Texas, 2010). There are approximately 250 existing wells in the Fairview area (Devon, 2012). The company employs approximately 115 people in the district and 45 people in the Dunvegan field.

A hydroelectric project has been proposed on the Peace River, 26 km (16 miles) south of the town. The proposed project would generate approximately 600,000 MWh of electricity per year. Construction on the dam was estimated to last three-to-four years and would generate approximately 500 person-years of employment. Canadian Hydro received formal project approval from the Natural Resources Conservation Board and Alberta Utilities Commission on May 7, 2009 to construct and operate a Hydro Facility and Power Plant (Canadian Environmental Assessment Agency, 2009). More recently, the energy company TransAlta reported that they are undertaking further investigations and monitoring of the area before they can build a hydroelectric project at the Dunvegan site (TransAlta, December 6, 2011).

Bruce Power (previously Energy Alberta Corporation) announced in 2007 that Cardinal Lake (approximately 50 km or 31 miles from Fairview) was one of the locations considered for a new nuclear power plant. If approved, the four reactors would have been functioning as early as 2017. The company announced in 2008 that it had taken the first steps toward building the power plant by filing an application with the Canadian Nuclear Safety Commission. However, Bruce Power eventually withdrew its application to construct a nuclear power plant and cancelled the proposed project in the region.

5.0 Methods

Researchers used interviews and focus groups to explore Fairview residents' perspectives of energy systems and influences on those perceptions. Interviews and focus groups provide a means to solicit in-depth descriptions surrounding the factors that influence community perspectives and local social values (Goetz & LeCompte, 1984; Ansary, Perkins, & Colonel, 2004). Forty-four residents took part in focus groups or interviews. A total of 19 one-on-one interviews and a total of eight focus groups were conducted. That included three group interviews with two people; two focus groups with three people; two focus groups with four people; and one focus group with five people. Interviews and focus groups were continued until saturation, or the point when emergent patterns in the data stabilize and no novel information is gained from additional respondents (Strauss & Corbin, 1990).

Fieldwork was completed during the months of May to July 2011 in Fairview. The primary researcher lived in the community for six weeks to interview participants and to better understand the factors related to community interactions and sense of place. Interviews and focus groups lasted between 45 minutes to approximately two hours. Researchers also attended community and local government meetings, events and everyday activities.

A combination of snowball and theoretical sampling approaches were used to select study participants. Snowball sampling is a method where participants recommend additional participants for the study (Biernacki & Waldorf, 1981). In a theoretical sampling approach, residents are selected on the basis of their knowledge or experience in a particular domain (Lindlof & Taylor, 2011). Advertisements were placed in the local newspaper and the newspaper used 'tweets' on social media to recruit participants or provide information about the study. The Internet and phone lists were also used to identify initial study participants. Efforts were made to ensure that there were a representative cross-section of participants in terms of job-type (including agriculture, fossil-fuel industry, government, business and other). There were also a relatively equal number of respondents from urban and rural locations and a variety of participants in terms of education, age and gender.

Interviews and focus groups were conducted using a semi-structured protocol. Interview themes included: (1) community focused questions (e.g., how the community residents solved problems, communication methods, sense of community and the interactions between community members); (2) place specific questions (e.g. residents' relationship with the land) and; (3) energy development questions (e.g. perceived risks and benefits of energy developments in the area, how it would affect views of their landscape or interactions with community members).

All interviews were transcribed and entered into the qualitative data analysis program *NVivo 9* for analysis. A combination of analytic induction and thematic analysis approaches were used for data analysis. Analytic induction involves identifying patterns in qualitative data through initial identification of themes and refinement of those themes through their continual testing against any new observations—a process related to 'progressive falsification' (Strauss et al., 1990). Thematic analysis is a complementary strategy to analytic induction. Statements are coded into categories reflective of observed patterns in the data, which are then situated into larger themes and illustrated by representative quotations (Rice & Ezzy, 1999).

Two researchers who were familiar with the interactional approach to community and risk perception research analyzed the data outlined above. The researchers then:

(1) iteratively compared themes and quotations developed using the procedures above to continually triangulate descriptions and interpretations (Suter, 2012); (2) attempted to collectively situate emergent themes within Paveglio et al.'s broad categories of local social context influencing local perceptions; (3) discussed modification of those broad categories of local social context given emergent community themes.

6.0 Results: Factors Influencing Perceptions of Energy Development

The following section describes the community factors respondents described as influencing public support or opposition of past or future energy developments in Fairview. Factors are organized using modified versions of three elements from Paveglio et al.'s framework. The fourth theme of that framework, access to and ability to adapt scientific and technical information, was found to be less influential in this case. We discuss reasons for this finding in the discussion section.

6.1 Demographic and Community Sustainability Characteristics

Presence of multi-generational residents

Fairview residents who inherited land from their parents or who were planning to pass on their land to their children often described a need to care for the land and be cautious of new developments. Some residents indicated that they would be concerned about new developments because they feared it would impair the ability of future generations to use it. As one Fairview farmer described:

If you have a next generation child, that's when it becomes really important to take care of it [the land], I think there's people in the community that don't have that situation and really don't care that much as long as it serves their purpose and they make money.

Multi-generational residents or those who planned to pass their land to another generation were often likely to perceive additional energy development as a potential negative impact to their landholdings or their children's perpetuation of their farming lifestyle. For instance, residents discussed the importance of sustaining the land tenure and uses during the next generation:

P1: We have to take care of it [the land]. It's our legacy. Like I tell my kids, I can't really control what they do with the land after I'm gone, but it's not going to be sold while I'm still alive.

P2: Yeah, ours is not mine to sell either. It's our kids, and their kids.

P1: It's my time to work with it and my name is on the title. When it comes to the next generation. Hopefully the children will keep it for the next generation. It doesn't mean they'll be farming it. Hopefully they keep it; they'll keep the land.

Desire for population growth and economic sustainability

The need for economic development and the creation of a 'sustainable' community was an important influence on perceptions of developments among Fairview-area residents. Many town residents indicated that they feared the community would

become a ghost town without any commerce. Residents who discussed the need for growth were more likely to say that Fairview needed economic stimulation offered by energy developments. That being said, a smaller minority of town residents stated Fairview did not perceive a need for additional income when compared to other area towns:

Fairview is relatively well off so if there's a prospect of a new industry, a nuclear plant, a power dam or a gas plant we say that's good, but when you run that through dead and gone, Alberta, somewhere where they don't know where their next meal comes from, then a nuclear power plant looks pretty darn attractive.

Respondents described a series of advantages associated with hosting an energy development in the area. The most common benefit mentioned by interviewees was the possibility of economic growth and jobs. As one business owner explained: "a lot of people in this community would like to see Fairview as bigger than it is; there is a lot of people that want to see a stable economy and a stable community to attract more people."

Fairview is the hub for a number of smaller communities and towns in the region. The greater MD of Fairview contains multiple smaller farming communities. Residents described how these different communities work together and depend on one another to maintain the wellbeing and functioning of the area. As one resident of a smaller farming area in the MD of Fairview described:

Our community is so dependent on the greater community. You have to give credit to the greater community because we are able to exist because the communities around us are successful, good communities. We are not an island. Our community is able to thrive because we are surrounded by other communities that are doing well.

Residents commented that they would be more likely to support industry growth or development to protect the *region*. Another service industry resident commented on the need for the sustainability of the larger Fairview community for the health of the smaller communities:

People just want to see the betterment and sustainability of communities and that's a scary thing when you're talking about a community disappearing. They're disappearing all the time...lots of the surrounding villages and hamlets aren't economically feasible...if it weren't for their neighboring rural partners they should, they would probably disappear.

Dependence on industry

Many interviewees described the importance of the natural gas industry in supplementing and supporting the economic vitality of the Fairview area. Some residents articulated a sense of pride regarding the strength of the fossil-fuel industry in Fairview and the benefits it provides to the community. Economic benefits associated with the industry extend to both farmers and the town itself. There was also an acknowledgement that there was a dependency on the fossil fuel industry (particularly Devon, the local natural gas extraction company) for jobs in Fairview. One respondent described this dependence:

We can't survive without the big boys [Devon] you've got to have them in your backyard and you've got to have them as good corporate citizens and you've got to have their employees and their expenditures and their students in school and round and around it goes.

Respondents in Fairview demonstrated quiescence when it came to arguments against the fossil fuel industry. This quiescence stemmed from the importance of the natural gas industry to the local area. As one resident described:

We had problems with one of our sour gas wells... but we didn't know what to say because a lot of our community works for Devon...enough that you don't want to hurt them, their livelihood. So when it becomes personal you don't fight too hard.

One of the most common factors respondents described as influencing potential support or opposition of future energy development concerned the existing relationship a company had with the Fairview community. For instance, one respondent explained the support for Devon energy developments over other companies: "if Devon came along, because they've been here for so long, been established for so many years, have so many community members working for them. If they were the company to come in and put it in place the community wouldn't even argue." Others indicated that an "outside company" conducting an energy project would have a very difficult time gaining local acceptance.

6.2 Interactions and Relationships Among Residents

Community identity and relationships

Almost all of the residents interviewed in Fairview described the importance of community bonds. The bonds between people in Fairview and their attachment to the community were also cited as a primary reason for residents to live in the area. As one long-time resident of Fairview described: "I live here [Fairview] mostly for the community, it just feels like home here." The bonds between people and a community's desire to enhance collective wellbeing also were discussed as a reason to resist future energy developments. For many respondents it was important to be perceived as a "good neighbor" and not to cause conflict between residents. Associated with these perspectives was the perception that some energy developments may harm neighbor relations or the livelihood of residents.

The effects of energy development on existing community dynamics and functionality were a primary concern of many residents interviewed. As one Fairview resident articulated: "Issues like the hydro dam, nuclear energy, that type of thing, a reason why we stay out of these things more than we should is because we don't want to hurt the community." Another resident explained why they would not want a nuclear power plant in the area: "no one would dare build a nuclear plant in Friedenstal [smaller farming area within MD], it would cause ripples and fights, and if you were a good neighbor you wouldn't allow that."

Communication networks

Respondents indicated that informal communication networks were the primary means for sharing information in the Fairview area. This is especially true when residents seek information about what is happening in the community, including possible energy developments. As one resident in the service industry described: "when people in this community want information they usually go to their

neighbors, that may not be the best, but perhaps your neighbors have heard something... most people stay within the community [for information].” Interviewees cited coffee shops as a common place to obtain and share information, partly because they did not want to share their views publically. Another resident explained:

Sometimes they [councilors, mayors, chamber of commerce] can be intimidating to people, when it comes to a point where people feel strongly enough about it they will speak out and maybe not in a formal way, but they’ll talk in the coffee shops and that always gets back to everybody. There are no secrets in the coffee shops.

Others residents developed informal groups to share information about local energy developments. For example, a group of local residents had developed an information exchange where they shared articles, publications and other information on nuclear developments in the area through a list serve. Fairview-specific information sources such as the local Royal Canadian Mounted Police, town council, the local ‘Devon Land Man,’ or *The Fairview Post* also were mentioned as potential information resources, but were not cited as frequently as other residents.

Community Networks

Fairview residents have organized informal groups in the past to address perceived problems and indicated they would be likely to do so in the future. One past example included the organization of a resident group to influence opposition of a proposed power plant in the region.

Residents indicated that emergent organizations would assess and promote collective perceptions of any local developments that would arise in the future. In that respect, these emergent organizations served as the funnel to articulate local values and perceptions about management of the region. They also became foundational components of efforts to influence broader support or opposition of various energy developments. As one resident described: “I think a group of people would lead. I think everybody would just band together and say this is what we need to do.”

Presence of local champions

“If the community wants something, it doesn’t always happen – it just depends on who is put in charge.” The preceding quote exemplifies Fairview residents’ perspectives about the importance of local champions in mobilizing support or opposition of local developments, including energy developments. Many interviewees noted the importance of local champions when challenging or encouraging a development in the area. Of particular importance was respondents’ description of “informal” leaders. Informal leaders are typically not elected officials, but rather influential citizens who others respect. For example, one resident described how informal leaders emerge in times of need:

There’s good people in office...but in a crisis situation the people that may be in the leadership roles right now will not turn out to be the leaders, I think that’s what happens in a crisis, the real and true leaders show up.

6.3 Place-Based Knowledge and Experience

Relationships to place

Every resident interviewed in Fairview described the beauty of the area and the Peace Country² more generally. Area aesthetics were a major factor in residents choosing to live in the area and they felt that living in such an area enriched their lives. Long-term residents or those with relatives who had lived in the area for multiple generations expressed a strong tie to the landscape and how it defined who they were as people. One retired resident stated, “The beauty of the land makes my living worthwhile, I can look out and see those coulees and of course our wind breaks and things like that, it makes me feel like home I guess.”

Other residents pointed out how the potential impact of energy development on the beauty of the countryside was a critical consideration in support of energy developments. As one resident described:

We are living on the fringe, away from the core population. We are tied to the land. If you're living in a remote area or semi-remote area there's a reason why. It's because you are trying to get away from the mainstream and that relates right back to the environment so that's why you get people in these remote areas in northern communities that are opposed to some of these projects.

Local peoples experience with developments

Fairview residents have experience with proposed energy developments (e.g., nuclear and hydro) and the area hosts existing energy projects (i.e. natural gas). Past dealings between the Fairview community and energy developers have resulted in both negative and positive outcomes; however, most respondents suggested that the overall outcomes to individuals and the community from energy development have been positive due to associated economic development and employment. Past instances of environmental impacts such as oil spills or pipeline problems were generally described by respondents as “small” and were perceived as being resolved without incident. Past dealings have engendered community trust in existing energy developers, and thus increased the likelihood of future support. One farmer stated that, “oil and gas is just like the land now, we just accept it and for the most part it's been very good to the community.”

Local independence and pride

Many Fairview residents expressed pride that they came from a rural area that they perceive as self-sufficient. Residents described self-sufficiency as the ability to derive sustainable products from their land and maintain the working landscape and agrarian economies of the region. This was particularly true of those who had grandparents and great grandparents in the area. For example, Fairview residents expressed support for a hydroelectric plant in the area *because* it could produce electricity for the region and employ local people. The important distinction for respondents regarded how any new development would be managed and its

² The Peace Country refers to a region located in Northwestern Alberta and Northeastern British Columbia.

benefits—local ability to contribute to discussions of energy facility management dictated whether the development fed into or detracted from that self-sufficiency. A desire for independence was also described as influencing Fairview residents' need to protect their landscape. One resident commented, "it's a frontier community...people have their land and that's their little kingdom and they will protect that." Another retired resident built on this sentiment: "these farmsteads are continuing on and getting bigger and better so to speak and the pride has never diminished though all of those generations and pride in what they do and what they accomplish."

Working the land

Agriculture is a significant industry in the Fairview area. Farmers perspectives on energy development are a complex interplay between the following factors: (1) the additional income offered for surface payments (e.g. payment in exchange for allowing companies to build roads, place pump jacks, drill natural gas wells); and (2) the desire to 'take care of the land.' Many farmers already receive money from companies in exchange for placing roads, pipelines or wells on portions of their land. These farmers thought surface payments were very beneficial and were more supportive of energy development. As one service industry resident stated about the fossil fuel industry: "I don't think any of the farmers really mind because they are getting compensated, and some years you really need that if it's a bad year."

However, other farmers were conflicted regarding energy development because it ran counter to their strong desire to take care of and be stewards of the land. These farmers often were concerned about energy developments on their or nearby lands and what impacts it would have on the soil, crops, or animals.

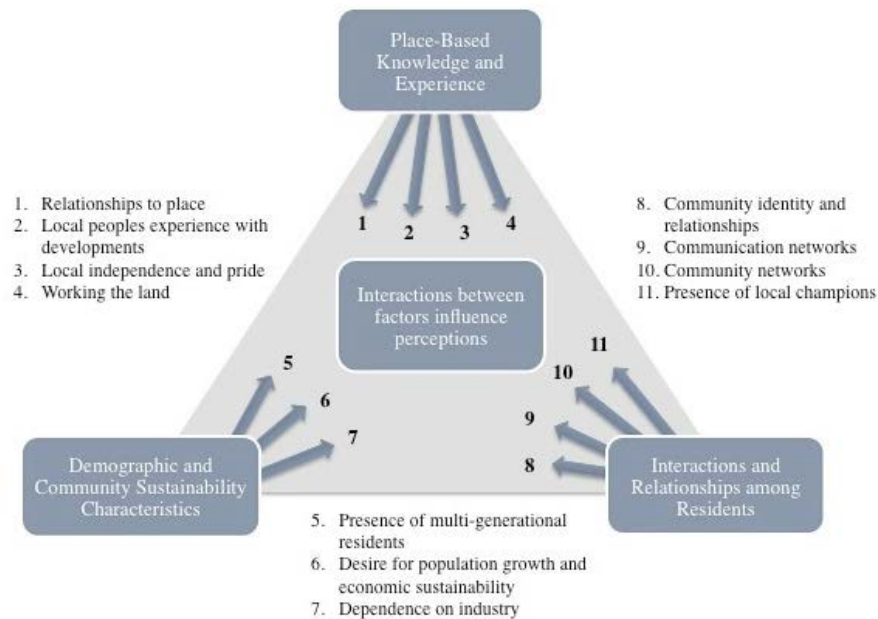
7.0 Discussion

7.1 Interacting Factors Influencing Perceptions

This study sought to better understand how local community context and residents' connections to place influence the formation of perceptions surrounding energy development. Our findings demonstrate that the unique combination of local characteristics in rural communities and regions such as Fairview are likely to have a bearing on the support for or opposition to energy development opportunities in those areas. That is, the historic and ongoing ways in which Fairview area residents interact, and relationships they have with the landscape, were instrumental in the development of their support or opposition for energy systems. Residents in Fairview were supportive of some energy systems and not others. That support can be, at least partially, explained by the unique intersection of local values, community relationships and place attachments operating in the area. We expand on these themes in the following paragraphs.

Figure 1 outlines the specific characteristics of local community context that we found influencing Fairview area residents' shared perceptions of energy development. We have organized these characteristics using three of the broad conceptual categories outlined by Paveglio et al. (2009; 2012; 2014).

Figure 1. Factors Influencing Risk Perceptions



Source: Authors

An interactional approach to community goes beyond a simple heuristic for organizing local social context. That perspective explains community as an evolving combination of interdependent, but periodically overlapping pieces of local context that collectively influence local perspectives related to continued community functioning. The unique set of influences operating in rural communities like Fairview collectively help explain why some perspectives about energy development arise. They are the outcome of community contextual characteristics interacting, modifying or contradicting the existing conception of community and place.

Fairview residents assess risks associated with energy development in two important dimensions: (1) as a danger to their individual wellbeing; (2) how it might affect their social wellbeing—the bonds they have established with a landscape and the people who reside there. In short, they assessed risk in terms of its impact to community. These two considerations were not mutually exclusive and are similar to earlier studies (Unger et al., 1985; Wakefield et al., 2000). For instance, many Fairview residents would oppose energy development if it would give rise to neighbor conflicts, considered how it might improve jobs for others in the community, and thought about how impacts on natural resources may affect their individual enjoyment of the landscape. Our results suggest that the strong existing values and interactions that characterize community identity in Fairview and local social norms that promote being a ‘good neighbor’ reinforce a view of energy development risk as a communal consideration. That perspective of being a ‘good neighbor’ also extended to the landscape in that residents wanted to protect the beauty of an area that they rely on for a living, have intergenerational ties to, and which they have great pride in (Devine-Wright, 2005).

Resident support for natural gas development in the area is tied to long-standing relationships and trust with *particular* companies that locals consider a part of the community, the way that surface payments can sustain agrarian economies, and the

presence of respected community leaders or other residents who work for those companies and serve as points of contact with the industry. Residents see the potential risks as a relatively minor issue or one that is an acceptable change given other uncertainties about land tenure and uses. The alternative to natural gas development partnerships was perceived as a shift away from a working landscape with protected natural areas and ownership among longer-term families who share strong norms about protecting the health of the landscape. Economic benefits such as local jobs and spending are important to many residents, as is the perpetuation of the regional area that relies on the town of Fairview as a regional hub. Flint et al. (2008) described this process as the development of a “regional field” or the emergence of community values and norms associated with a larger geographic region in rural areas.

Influences comprising community context must be considered as a multidimensional construct embodying how residents’ perceive of their coupled human and natural system. New energy developments can threaten to change the local system. The form of that potential change, particularly whether it is commiserate with existing uses and relationships people have with the landscape, will ultimately influence support or opposition of that development.

7.2 Adapting a Framework for Community Perceptions

As discussed previously, we organized the characteristics influencing local perceptions using the broad conceptual categories outlined by Paveglio et al. (2009; 2012; 2014). In general, the conceptual categories hold up fairly well and are useful for organizing elements of local social context of energy development. We found that one category, *access and ability to adapt scientific and technical information*, was less useful in characterizing local contextual factors influencing perceptions of energy systems.

Comparing the risks and mitigations associated with energy development and wildfire provides insight on the lack of community context related to accessing and adapting scientific and technical information. Wildfire risk has been characterized in recent years by efforts to stimulate residents’ personal responsibility for wildfire mitigations on their individual properties (Toman, Melanie, McCaffrey, & Shindler, 2013). Put in another way, wildfire risk is characterized in part by the opportunity for *personal efficacy* to reduce that risk through mitigations.

In contrast, risks posed by large-scale energy developments are often conceived of by scientists and residents as featuring less personal efficacy. One property owner would have a more difficult time reducing their risk from a catastrophic dam failure and the associated flood, the contamination related with nuclear power plant meltdown, or the impact of natural gas leaks on landscape processes. Thus the risks posed to people by energy technologies, and to a lesser extent, the risks posed to area landscapes, are inherently communal in their scope. There is primarily *community efficacy* for risks associated with energy developments in that residents can chose to exclude the systemic risks associated with energy development from ever occurring. That is, development or blockage of energy development requires community-level interaction, and therefore needs to consider community context. It is for these reasons that we suspect that *access and ability to adapt scientific and technical information* was not important in Fairview.

8.0 Conclusion

It is likely that other rural communities featuring similar combinations of local community context to Fairview would develop similar perspectives about energy developments. It is also likely that communities with different community context (e.g., strong local economic sector, little to no existing relationships with industry, less defined sense of community and ability to organize) would form very different perspectives about energy development, and lead to place-based variance in support or opposition to such developments in their locality. In Fairview, any future energy development must be framed in terms of what it can do for a community tied to a farming landscape and reproduced by people who seek to protect that way of life. Companies who seek to develop energy in the area need to leverage existing relationships or build trust with residents. This means ensuring siting energy development facilities in ways that will not impact or benefit some residents over others (Groth et al., 2014; Wüstenhagen et al., 2007). Energy developers must also outline how the benefits of that energy development will protect the local environment, or at least its current uses (Devine-Wright, 2005; 2009). We suspect that certain forms of energy development will not be seen as tenable to Fairview residents, particularly those that are not seen as benefiting local community members. The point here is that we need to better recognize how and why some energy development is supported among diverse communities and plan accordingly.

This study provides a starting point for documenting elements of community culture that influence perspectives about energy development in rural communities. Applying a similar approach in other localities can begin to determine which community context characteristics can be applied across cases and used as more consistent predictors of support and opposition to energy development. Such an approach is needed as the majority of risk perception research adopts a psychological basis that tends to focus on the individual. Those findings are incommensurate with findings in this study and many others demonstrating that individual views are the product of the broader social context of individuals, and particularly tied to place-based understandings of a locality. Conflict over development is inherently a geographical issue—but relationships that form among residents' within a commonly associated place often define the geography of interest (Devine-Wright, 2009). Thus, community—which is the expression of common place attachment among individuals and which characterizes the need for individuals to interact surrounding shared values—plays an important role in both conflict and acceptance of energy development. Likewise, peoples' experiences with place may influence whether they perceive industrial development as a threat or opportunity (e.g. past experience with natural gas drilling operations, area recreational activities, perceptions of the area as natural and untouched) (Boyd, 2015; In Press).

While the conception of community and its basis as a means for understanding societal trends has changed in industrial societies, certain truths remain. We are, at least in part, defined by the people we interact with; by the settings in which we live or spend time in; by the ways we identify with groups of people (Wilkinson, 1991). For that reason we argue that community still matters to the study of risk; for the understanding of how people respond to change, and in the ways they develop their individual perceptions about potential impact. For many residents who are faced with a technological development, the conceptions of community described in this study serve important societal functions and certainly factor into their risk perceptions. This is especially true in rural locations, as these are areas where many

future technological developments will occur. Understanding how rural communities will react to technological development, ensuring that it does not disrupt community functioning, and promoting healthy communities in its wake necessitates that researchers renew their focus on the ways that community is created and perpetuated. We argue for this renewed focus because the unique attributes characterizing each of the communities will help dictate what types of strategies and energy development systems will be supported in those communities and how to increase their acceptance in ways that work with, instead of against, local culture.

9.0 References

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