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Procedural justice in Canadian wind energy development: A comparison of community-based and technocratic siting processes



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ABSTRACT

Though there is a growing literature on the value of participatory siting processes for increasing local acceptance of wind energy development, there has been much less unpacking of how residents view the siting process itself. We explore differences in the ways governments and developers enact planning and how this impacts both acceptance/support and procedural justice outcomes. This mixed methods study employed in-depth interviews ($n = 54$) and surveys ($n = 252$) with multiple stakeholder groups to understand perceptions of procedural justice across two Canadian provinces. We compared Ontario – which has built a strong base of wind energy capacity using technocratic siting procedures with Nova Scotia – which has anchored its development strategy more explicitly with a community-based program. We find stronger levels of perceived procedural justice in Nova Scotia across the majority of principles tested. In Ontario, opposition to local developments was highly conflated with a lack of procedural justice including few opportunities to take part in siting. Across both provinces however, specific aspects of planning processes – mostly related to ‘the ability to affect the outcome’ – were strong predictors of local approval of wind. This paper closes with a discussion of how future policy programs can more effectively engage with principles of procedural justice.

1. Introduction

Governments are turning to renewable electricity production to address climate change, reduce air pollution and increase energy sovereignty. Though many have hailed the Ontario government for leading Canada in wind energy capacity, this has often come at the cost of considerable turmoil in rural communities [1,2]. Though there is a significant literature on the value of participatory siting processes for increasing local acceptance/support of turbine developments, there has been much less empirical work regarding how residents and other stakeholders view the siting process as opposed to the turbines.

In the context of Ontario, Canada pressures to stop wind energy production in the province have increased significantly since the implementation of the controversial Green Energy Act (GEA) and Feed-In Tariff (FIT) program – which together took away local decision-making ability and led almost exclusively to technocratic, corporate-led development [3,4,5][3, 4, & 5]. Opposition to these policies have been expressed in many ways including through the provincial conservative party's call for a moratorium on all development [6] and 90 Ontario townships and counties passing resolutions declaring themselves ‘non-willing hosts’ for turbine development [7]. Meanwhile, such a list of unwilling communities cannot be found in

Nova Scotia, where through its Community Feed-In Tariff (COMFIT) program, the province implemented a more bottom-up, locally-based renewable energy program. Recent research has suggested this approach has led to relatively high levels of support [8–10].

2. Background literature

Technocratic, top-down development which removes real power for locals to veto development usually leads to relatively fast build-out of wind energy capacity by limiting the opportunities for opposition [11,12]. However, development done in this way has been said to increase claims of injustice that may have political traction and thus threaten the long term growth of the industry [13,14]. This has prompted considerable interest in community-based wind development as a model for addressing both procedural and distributive fairness [15]. Despite its theoretical advantages, some research has suggested the ‘romanticized’ narrative of community energy [15,16] may be hiding some practical or ‘on the ground’ shortcomings including the degree to which communities will benefit in terms of process and/or outcomes [17,18]. For example Walker and Baxter [9] identify serious concerns about distributive justice in terms of the sharing of local financial benefits to those living closest to turbines. Perhaps because

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this ‘questioning’ of community energy is still new, there has been little empirical work to date that has focused on procedural justice. Looking at wind energy in the UK, Simcock [16] provides a rare exception – though his qualitative study of stakeholders heavily engaged within planning processes. We build upon this work by combining multiple methods to study procedural justice across a wider range of stakeholders involved with or living near wind turbines in Canada.

In light of the increasing opposition to wind turbines in Ontario and elsewhere, social scientists have been studying the multitude of factors that shape local response to development. This emerging ‘social dynamics of wind energy literature’ includes a variety of explanations including: noise and esthetic concerns [19] as well as personal attitudes and experiences with wind turbines [20,21]. Others have subtly and not-so-subtly suggested that selfish, Not In My Backyard (NIMBY) attitudes of locals are the most important factor [20]. Most published research tends to refute this characterization (e.g. [22–24]) often pointing instead to a lack of fairness or equity in the development process as the being at the root of localized opposition [12,23,25]. Through many of these studies, fairness and equity have often been merged in the efforts to better understand a wider range of community perspectives and experiences [10,26–32].

Yet ideas of fairness during siting processes and fairness of turbine cost and benefits distribution after they are built represent two distinct concepts [33,34]. Much of the focus on distributive justice in this context has been on the distribution of turbines and their negative impacts, but also on the distribution of benefits [9]. Procedural justice on the other hand tends to focus on the participation of locals in wind energy planning and the conditions of that participation. For these processes to be considered just, meetings must be accessible, [35] decision-makers must recognize the legitimate contributions of local citizens, and public input should have some bearing on final decisions [36]. Some have already argued that meaningful access to decision-making is not met in turbine siting in Ontario and elsewhere [12,13,37,38].

Some have argued that fairness of process may be more important than fairness in the distribution of benefits from turbines [9,39]. The broader international literature focusses mainly on procedural justice as the most pertinent of the justice variables in shaping public response to wind energy [12,27,40]. In the Canadian context, Jami and Walsh's [38] recent review suggests a model containing six variables as major factors for success in wind energy project deployment. Of the six, at least three (addressing concerns, transparency, and involvement of stakeholders) relate to procedural justice while only one (financial compensation) concerns distributive justice.

Even though many are now writing about procedural justice, citizen participation and wind energy, authors have rarely explored procedural and distributive matters as separate effects ([16,40] are two notable exceptions). There remains both practical value (e.g., very different policy implications) and conceptual value (e.g., unpacking ‘fairness’) in exploring the distinct explanatory power of the siting process, by understanding of the nuances of procedural justice in wind energy development.

Our theoretical understandings of procedural justice can be linked in part to the literature on citizen participation in planning. Arnstein [41] described the now well-known eight-rung ‘ladder’ of citizen participation whereby the degree of involvement ranges from non-participation (e.g. manipulation, therapy) to the highest levels of citizen power (e.g. partnerships, citizen control) – the latter being more in line with the ideal of community-based wind development in the literature [42]. There are numerous accounts of the negative impacts of token displays of public participation where local voices are encouraged, but with little real influence over the planning outcomes (e.g., merely consulting or simply providing information), processes that simply inform locals of a planning decision that is already a fait accompli [42–44]. Despite the popularity of the ladder of citizen participation in terms of theoretical writings, Painter [43] has argued

that those looking to assess participation should also look to outcomes (i.e. how things changed because of participation) rather than only analyzing power structures prior to these processes. Further, we are concerned that the ideal of levels of participation has little meaning for those on the ground who experience felt injustice. Papers that do cite Arnstein's idea most often do not seem to do so as part of the larger orienting theoretical framework of the paper and we likewise do not (see [22,47–50]). Instead we draw on Arnstein's focus on the concept of ‘citizen power’ to align with and unpack the allied concept of procedural justice as comprised of four key elements: information sharing, opportunities to participate, the ability to affect outcomes and dealing with the developer more generally.

Arnstein's ideas of citizen control and providing information, are only two of four procedural justice dimensions that emerged from our interview analysis. We further compare these key dimensions of Arnstein against another core element of fairness- distributive justice. This allows us to link these literatures and at the same time take on Painter's [46] suggestion that distributive issues dominate.

We compare experiences of development by province largely because the policy and planning processes were very different. Though both policies share some similarities, there was a much more community-based approach taken in Nova Scotia which was a reboot of a problematic technocratic approach in that province. Thus we expected much higher scores on both procedural and distributive justice measures as well as overall support in Nova Scotia. That is, the working hypothesis is that a perceived lack of procedural justice is playing a role in the amplification of the intense local opposition to wind turbines in Ontario and to a lesser degree, Nova Scotia. Below we provide a very brief overview of the wind energy policy context of Ontario and Nova Scotia, Canada. More extensive reviews are available elsewhere (see [3,5,8,9]).

3. Study context

This section outlines the differences in wind turbine siting policy in Ontario and Nova Scotia since this is the main analytical comparator.

3.1. Ontario's FIT program

The main mechanism by which wind turbines have been built in Ontario has been under the Green Energy Act (GEA; see [5]) and the Feed-In-Tariff (FIT) program [51,52]. First introduced in 2009, the GEA streamlined approval processes and removed local planning authority related to energy development – including wind and solar energy projects. Various studies have pointed to this policy change as the main driver behind public opposition toward wind in Ontario [3–5,53].

The most salient feature of the FIT system for the purposes of this study is that policy is set up in a way that has failed to encourage widespread use of community-based models – where local profit sharing and involvement in decision-making is more prevalent.¹ This contrasts the experiences of other countries such as Germany. While FIT programs are ideally meant to increase community ownership, Ontario's pricing structure [54,55] and movement toward promoting engagement over ownership [5,9,55] has resulted in a system more geared toward developers rather than communities. What the Ontario FIT program did offer was set prices over several years for electricity generated through renewable technologies including large wind turbines (e.g. 11.5 cents/kWh). The main, and largely unsuccessful, mechanism for encouraging community-based wind projects was through the introduction of small ‘price-adders’ – based on the level of local ownership [55,57,58].

¹ Exceptions include a single turbine located near Exhibition Place in Toronto which was developed in part by Canada's first community wind power co-operative, WindShare (<http://www.windshare.ca/>).

The failure of FIT to encourage community-based development combined with the streamlined approvals process under the GEA encouraged developer-led wind projects in Ontario effectively subverting several elements of procedural justice. All Ontario-based wind projects investigated through this study were built under the GEA/FIT program and were majority owned by a commercial developer.

3.2. Nova Scotia's COMFIT program

While Ontario's main policy program has led to a lack of community-owned wind projects, the most relevant feature of recent policy in the Nova Scotia system is the *requirement* that developments must be owned by the public. Years after relatively small advances in development across Nova Scotia, wind energy was re-envisioned under the Renewable Electricity Plan (REP) of 2010. A major component of the province's REP was the Community Feed-in Tariff (COMFIT) program, which like the FIT program of Ontario set attractive and guaranteed prices for renewable energy production. However unlike Ontario's main policy tool, COMFIT stressed energy production that was owned (51% or more) by municipalities, citizens within municipalities, or local community groups as a requirement.² These transformative policies were informed by stakeholder engagement processes which allowed for the sharing of public views related to renewable energy development [8].

While putting profits in the hands of locals speaks to distributive justice with 51% ownership also comes power over decision-making which also speaks to Arnstein's ideas about citizen participation and control. For this reason, we expected that community ownership would translate into high levels of community participation in facility siting as well – e.g., for residents to understand the nature of potentially investing in the project. The idea that greater participation in the process comprised a key difference from Ontario is also informed by government reports which highlighted COMFIT's promise to '[empower] people at the local level' [59] and by the requirement of proponents to prove public engagement and support [60]. Prior to the implementation of COMFIT, some wind projects were also developed through Community Economic Development Investment Funds (CEDIFs) which like COMFIT, required at least 51% public ownership [60–62].

Thus, we studied three key project ownership structures in Nova Scotia in order to better understand all development in the province. Most of the wind projects studied (5/7) were sited under the COMFIT program or were majority owned by a municipality, one was built under CEDIF, while one other was built under the Ontario-like, developer-led model.

4. Methodology

We used a mixed methods, comparative case study design [63,64] to study perceptions of procedural justice in Ontario and Nova Scotia. We combined in-depth, qualitative interviews ($n = 54$) with quantitative surveys ($n = 252$). Interviews took place with municipal leaders ($n = 10$), developers ($n = 7$), policy experts ($n = 6$) and mostly residents ($n = 31$) across 7 wind turbine communities in Ontario ($n = 3$) and Nova Scotia ($n = 4$). Communities were chosen using a combination of criteria including those related to policy frameworks, and a lack of existing or ongoing research.

The communities of Adelaide-Metcalf and Norwich, Ontario are located in agricultural, southwestern Ontario near the larger urban centers of Strathroy and Woodstock respectively. Wainfleet, Ontario is located in the Region of Niagara – just off the northeastern shore of Lake Erie. The communities of Canso, Antigonish, Sheet Harbour and

New Russell made up the qualitative sample in Nova Scotia and though also rural in nature, were less agricultural compared with sites in Ontario. They are located in a variety of locations across the relatively small province of Nova Scotia.

While the focus of the interviews was lived experiences of siting processes with residents, other groups were sought to increase our understanding of procedural justice from multiple stakeholder perspectives (see [65]). Residents volunteered after receiving a Letter of Information (LOI) by mail. This letter was sent to approximately 40% of those living within 2 km of a wind turbine in both provinces ($n = 407$). The 2 km radius was chosen because we were interested in seeing what the planning process was like for the community of people most affected by and intimately aware of local wind energy development. The use of the setback also enables consistency with recent studies in Canada (e.g. [1,26]). Some residents were also interviewed following snowball sampling – whereby an existing participant would forward the researcher's name to another member of the community often living just outside of the 2 km setback. Other stakeholders were contacted directly using publicly available information such as email addresses. The qualitative sample was mostly made up of middle-aged to elderly people and approximately half (29/54) were male. Interviews were audio recorded, transcribed verbatim, while inductive grounded-theory coding was managed using NVivo qualitative data management software. Analysis of the interviews was completed through line-by-line, thematic analysis with a focus on those ideas related to procedural justice [66,67].

Based largely on preliminary analysis of the interviews, a quantitative survey was developed with items relating to a variety of turbine issues including perceived procedural and distributive justice, general attitudes toward wind energy, and sociodemographic characteristics.³ Some of these variables were used as controls based on their capacity to predict facility acceptability in a range of risk perception and facility siting studies [68]. Most questions were on a five point, Likert-scale from 1 (strongly agree) to 5 (strongly disagree). The LOI accompanied each survey, sent out to all households within 2 km of a turbine in the same seven communities studied during qualitative research, plus three more communities in Nova Scotia to boost sample size (see Maps – Figs. 1 and 2). As there were relatively few people living in each community, (i.e. average number of homes was 135), there was no need to random sample. Gaetz Brook and Upper Hammonds Plains are located in the Halifax Regional Municipality while Wedgeport is in southwestern Nova Scotia near the town of Yarmouth. To bolster participation, each participant was offered entry into a draw for one of four \$100 gift cards to a [national] store of their choosing.

In total, 1346 surveys were sent to all homes within 2 km of a turbine across the 10 communities. 240 resident surveys were returned and completed ($n = 127$ in Ontario; $n = 113$ in Nova Scotia) for an overall response rate of 17.8% (18% in Ontario, 17.7% in Nova Scotia). Though response rates such as this are fairly typical in Canada for such research, there remains potential for a nonresponse bias. Many of the cases in Ontario in particular involved protests from local residents which may suggest that those most concerned about the negative impacts of turbines are most likely to respond. However, this must be tempered by a general distrust of all research, particularly among the most vocal, which suggests a tendency for non-response from that group. We suggest these patterns likely balance each other and agree with recent research in other wind energy contexts suggesting that non-response bias is likely limited [69,70]. Though there is a possibility that those who are generally content with local turbines are disproportionately represented among non-responders, we have no reason to believe that such non-response bias should be any more pronounced between provinces, which is the main unit of comparison in this study.

Respondents in the three Ontario communities were less educated

² Groups eligible for ownership of wind energy projects under COMFIT included: municipalities, aboriginal groups, co-operatives, universities, community economic development investment funds (CEDIFs) and non-profit groups [56].

³ A full copy of the survey is available to readers upon request.



Fig. 1. Map of Ontario communities.

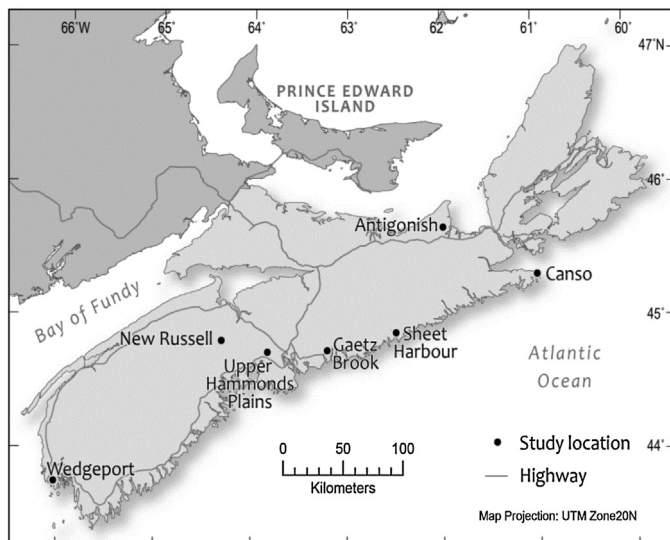


Fig. 2. Map of Nova Scotia communities.

(64.6% college education or higher vs. 70.2% in Nova Scotia), earned slightly higher family incomes (80.9% earning \$40,000 vs. 74.4% in Nova Scotia) and were more likely to own their place of residence (97.6% vs. 85.75% in Nova Scotia). As echoed by Christidis et al. (2014), who also studied perceptions of wind energy in rural Ontario, it is difficult to draw inferences about generalizability by comparing sample demographics with population characteristics. This is because the definition of a ‘wind turbine community’ is typically much smaller than census areas that are available for comparison. However, to ensure that our sample was *more* representative of larger rural populations, we ‘weighted’ our survey data (see [71]) to align with the gender distribution of the larger census tracts of both provinces. Across Ontario and Nova Scotia, females were slightly underrepresented and so we weighted the data set accordingly. All quantitative findings thus represent statistical analyses run under a more representative sample.

Surveys were analyzed using SPSS, first using simple frequency and bivariate analyses such as *t*-tests of means, and correlations. This was followed by a more advanced, five-stage multivariate regression analysis with an indexed dependent variable. This index was created

through the combination of two questions: “Overall, I approve of the way the wind energy development was planned and built in my community” and “I support the existing wind power project in my community” and was meant to capture residents’ overall approval of wind energy development processes. Throughout the analyses, we purposively grouped quantitative variables in order to investigate procedural justice in the context of Arstein’s ladder of citizen participation. As is shown in Tables 2 and 3, we use *Information* and *Opportunity* to represent the middle rungs of the ladder – also known as tokenism. The *Ability to affect outcomes* variables are related to the highest levels of the ladder – attempting to measure how much citizen power local residents experienced. We also use a group of variables called *Dealing with the developer* which is entrenched within our concepts of procedural justice and has been said to influence public support for wind energy development [72]. The independent variables chosen for inclusion in the regression model were done so based on their significance throughout bivariate analyses and/or were said to be associated with local support and or approval of siting in the literature.

5. Results

The following findings juxtapose interview quotations with survey analysis focused on the evolution of and experiences with procedural justice elements related to provincial policy. Qualitative findings provide the reader with an in-depth understanding of the major themes, while survey work tests these ideas across larger samples. The main analytical comparison is between Ontario and Nova Scotia – provinces that had very different planning processes.

5.1. COMFIT: “sounds better than what’s going on here!”

Most of the residents we spoke with in Ontario were unaware of Nova Scotia’s COMFIT program. Thus, the interviewer would describe to these residents how community-based ownership typically plays out in other jurisdictions. There were generally positive reactions, whether one was supportive or opposed to wind energy in Ontario. For example, “James” a resident and “Michael” a resident and politician of Adelaide-Metcalfe, talk about what they like about the community-based model (e.g., better communication, more positive conversations), in an area where large corporations have been responsible for wind energy development:

“James” (ON, supportive): That [community-based development] sounds better than what’s going on here! It’s kind of every man for himself you know what I mean? So if it was a more community-oriented thing that would be great...

“Michael” (ON, neutral): There should be more open communication with the municipality....That would have kept people better informed and it would have been a more positive conversation. So coming up in the future, if there’s the opportunity for a, like a cooperative type program ...I think the municipality could be a partner in it.

Survey responses also show higher degrees of approval of community-based wind development. Table 1 shows the percentage who reported agreement and the average response (likert-scale; 1 = strongly agree, 5 = strongly disagree) concerning questions related to community-based development and local decision-making (Table 1). Using *t*-tests of means, there are statistically significant differences between the two provinces for three of four questions. Residents experiencing the more community-based siting process of Nova Scotia were more likely to agree that: “local residents should be able to invest and share in the profits of local turbines” and “local government should have greater decision making power in turbine facility siting”. Respondents from Nova Scotia were also statistically less likely to support ideas around local government and/or public

Table 1
Residents ideas about community development.

		Percentage (%) agreed	Mean	Mean difference
Wind energy development is best when it is owned by local communities	ON	49.9	2.43	.20
	NS	62.6	2.23	
Local residents should be able to invest in and share in the profits of local turbines	ON	69.9	2.09	.50**
	NS	91.0	1.59	
Local government should have greater decision-making power	ON	69.1	2.15	-.53**
	NS	46.9	2.68	
I would like to see the wind energy decisions decided through a public referendum or vote	ON	77.3	1.84	-.35*
	NS	69.3	2.19	

* Differences are significant at the $p = .05$ level.
** Differences are significant at the $p = .01$ level.

referendums having more influence on decision making processes.

5.2. Meaningful participation opportunities in the siting process

Residents of Ontario and Nova Scotia also differed in terms of how they spoke about their specific experiences of planning processes such as open houses and general information sharing. These stories ranged widely even within the same community. For example, some across both provinces believed that open houses went well and that their voices were listened to, while others perceived them to be a “waste of

Table 2
Procedural justice variables by province.

	Province	% Agree	% Diff. ^a	Mean	Mean diff.
<i>General approval</i>					
Overall, I approve of the way the wind energy development was planned and built in my community	ON	22.1	-43.3	3.90	1.46**
	NS	65.4		2.44	
<i>Information</i>					
I was provided with enough information on the existing wind power project before it was approved	ON	32.2	-14.9	3.50	.51*
	NS	47.1		2.99	
The information provided by the developer on the existing wind power project has been trustworthy	ON	26.6	-5.8	3.51	.58**
	NS	32.4		2.93	
The plans relating to the wind turbines were always transparent to local residents	ON	33.8	-7	3.30	.30
	NS	40.8		3.00	
<i>Opportunity</i>					
I felt encouraged to take part in the planning process for the local wind energy development	ON	28.9	-1.5	3.43	.12
	NS	30.4		3.31	
Local residents were made adequately aware of the opportunity to participate in the planning process for the local wind project(s)	ON	41.0	-3	3.13	.17
	NS	44.0		2.96	
I had ample opportunity to voice concerns about the existing wind power project before it was approved	ON	45.6	2.4	3.02	.13
	NS	43.2		2.89	
<i>Dealing with the developer</i>					
The wind energy developers in my area were always truthful in its dealings with the community about the project	ON	25.4	-13.2	3.39	.60**
	NS	38.6		2.79	
The wind energy developer in my area used bullying tactics	ON	30.5	22.3	3.05	-.69**
	NS	8.2		3.74	
The wind energy developer seemed to go the “extra mile” in listening to and engaging with the local community	ON	23.1	-12.8	3.47	.55**
	NS	35.9		2.92	
<i>Ability to affect outcome</i>					
Overall, participation in the siting process lead to meaningful changes in the siting outcome	ON	14.1	3.7	3.46	.21
	NS	10.4		3.25	
Local residents’ concerns about the wind power project were adequately dealt with before it was approved	ON	17.8	-16.6	3.80	.83**
	NS	34.4		2.97	
Turbines were set back further away from homes in some cases when concerns arose	ON	15.0	-20.7	3.42	.63**
	NS	35.7		2.79	
I felt in control in terms of whether or not the turbine(s) were going to be built in my community	ON	6.7	-3.6	4.31	.43**
	NS	10.3		3.88	

^a Differences represent the difference between percentage agreed with the statement in Nova Scotia, subtracted by the percentage agreed in Ontario. A negative value represents a case where there was more agreement in Nova Scotia.*Differences are significant at the $p = .05$ level. **Differences are significant at the $p = .01$ level.

time”. Generally, those falling into the latter category opposed their local project. Indeed survey data reveals that 68.8% of those who agreed that they “had ample opportunity to voice their concerns” supported their local project (17.2% were opposed). But it is how residents talk about these experiences that best illustrate how much better things were for residents in Nova Scotia. “Dan” a politician in Chester, NS recalls that during one of their planning sessions all but one person – someone vacationing in Australia – was able to ask questions.

“Dan” (NS, supportive): Well there was one case where we had someone that had live video feed from somebody in Australia that kept breaking up and we grew impatient with that and we said “you just got to quit because we can’t make any sense of it... you’re hearing one word and not the next.” But I mean everybody was given their chance.

In Ontario, most of the residents we spoke with had negative things to say about planning processes. Many did not even recall receiving invitations to public meetings. Of those that did attend meetings, one of the most common criticisms was that plans regarding development were already set. “David” remembers little opportunity to have real discussion.

“David” (ON, opposed): Nobody could say anything – it was coming regardless and they were going to put up so many towers... we wasted our time thinking we can do something about it and is that ever frustrating because we weren’t listened to or heard.

In Ontario, experiences of these open houses and meetings described by some developers we spoke with reveals frustration on their end as well. When “Ian” faced those opposed to development at an open house,

he reported that he was constantly yelled at. When asked what he could have done differently to make the meeting less volatile, he describes the situation from the point of view of trying to “convince” rather than engage in dialog:

“Ian” (ON, supportive): I wouldn’t say there was anything [I could have done] ...if you’ve got a group of people that are minds set up there was no convincing those people. No convincing. Jesus Christ could have come down himself! They probably would have crucified him!

Further, survey data supports the idea that residents of Nova Scotia approved of their more participatory community-based process (see Table 2). In a similar way that Firestone et al. [40] measure overall satisfaction with development processes, the statement “Overall, I approve of the way the wind energy development was planned and built in my community” was meant to capture the overall view of the siting process. Agreement with this statement was almost three times higher in Nova Scotia (22.1% in Ontario; 65.4% in Nova Scotia). The remainder of the table is comprised of blocks of more specific variables related to justice and siting including: information, opportunity, dealing with the developer, and ability to affect the outcome. There are significant differences in the expected direction between provinces for most (9 of the 14) procedural justice variables tested (i.e. more justice in Nova Scotia). Exceptions include all three variables related to “Opportunity” and the question “Overall, participation in the siting process lead to meaningful changes in the siting outcome” – where both responses from both provinces are very low (14.1% in Ontario; 10.4% in Nova Scotia).

Despite the apparent higher degrees of perceived procedural justice in Nova Scotia across most questions, there seems to be a general lack of satisfaction with a wide array of dimensions of procedural justice in both provinces. Besides the “overall approval” measure, values for *both* provinces are consistently below 50%. In terms of the “ability to affect outcome” variables, there are particularly low scores, where for example only 6.7% (Ontario) and 10.3% (Nova Scotia) reported they felt they had any “control” over whether the turbines were built.

5.3. Lack of real power

We explored the idea of control initially in the interviews where residents in Nova Scotia had strong opinions about this lack of power (control over the decision). Thus the COMFIT program was not a panacea in relation to meaningful community participation.

“Janice” (NS, opposed): Where in the process did we have a say? We didn’t. Though they allowed us to come to meetings and they allowed us to speak but when it came right down to it didn’t change anything. It held no weight.

Also in contrast to the mostly positive experiences in Nova Scotia, an interview with “Nancy” indicates that a lack of decision-making ability shaped her feelings toward a local project. She felt the companies responsible for the turbines employed a “steamroller attitude”.

“Nancy” (NS, opposed): [Company name] has come in kind of like with that steamroller attitude like “let’s just get the job done. We know what we need to do.” ...It’s got nothing to do about community,...it’s about how do we do it...make sure we do it legally.

This idea of a lack of control in Nova Scotia is somewhat surprising given how community-based development is often generally touted in the literature. During an interview with a small-scale developer in Nova Scotia (“Roger”), we are given a hint as to why this may be the case. He suggested that local residents were generally unaware of investment opportunities, and when larger community groups do purchase equity, they are making relatively small gains.

“Roger” (NS, supportive): These [COMFIT] projects are not really community projects in the sense of being owned broadly by the community... I mean they can write the script for a press release that says how great community projects are, but are [these communities] going to be happy a decade from now from how much money they’ve got?

Though there were others like “Ann” – a resident in Nova Scotia – who was not only aware of opportunities to invest but did so – for only “ten dollars a share”.

Interviewer: Do you feel like there was the opportunity for anyone in the community to invest?

Ann (NS, supportive): Yeah! I mean anyone that wanted to. For... like ten dollars a share... I don’t know what I bought, ten shares or something like that for 100 dollars.

“Ann’s” experience was unique though, as survey data shows that whether or not the wind project was built under a community-ownership model or not, most residents in Nova Scotia were unaware of opportunities to invest. In fact even in Ontario where in most cases there was no opportunity to invest,⁴ a higher percentage of people (20.7%) reported they were aware of this investment possibility (most near Norwich), compared to those who were aware in Nova Scotia (16.7%). Based on the percentages of our samples near facilities with the opportunity to invest, the maximums are: Ontario (24.4%; 31/127 residents) and Nova Scotia (65.5%; 74/113 residents).

5.4. Tangible benefits of community-based approach

One of the main advantages of the qualitative portion of this research was to add depth to how residents experience elements of procedural justice in their daily lives. In conversations with residents and developers in Nova Scotia in particular, were stories of sometimes small, but tangible benefits when community-based approaches were used. “Caroline” from Nova Scotia illustrates this theme through the story of an elderly couple who believed their clothesline was too close to the edge of development.

“Caroline” (NS, supportive): [So] the guys that were working there dug a deeper hole and put up a nice sturdy pole for them and talked with them and said “Okay is this good? Is it okay if we move it this way just slightly?” And you know, from what they had [before] they upgraded. I mean I don’t think a clothesline pole would be too important to a lot of big companies but because it’s a community project, because the community is involved you can have those kind of discussions.

This idea of developers and their contractors empathizing with the everyday problems locals face – issues as seemingly simple as taking a few minutes to help out with a clothesline – suggests that simple social connections help build trust. The latter is a well-known correlate of meaningful public participation and facility siting. We did not hear about such connections being made in our Ontario interviews which is only suggestive at this point that it had something to do with community-based development. But what is clearer is that such experiences are associated with better procedural experiences. From the developer’s side in the COMFIT context, “Brian” points to the nature of his approach to business as the reason why they are able to be more respectful of communities during planning and siting stages.

“Brian” (NS): We’re a smaller company, we’re private, we’re not publicly traded, we have a younger team who’s quite passionate

⁴ The exception was the project in Norwich which compromised 29.2% of the Ontario sample. There, the developer offered and received 49% equity from the public. Excluding Norwich, the percentage of the Ontario sample that was “aware” of opportunities to invest was 11.1%.

about renewables, we all get into this because it's so important to us, you know? And I think that tends to allow us to be a little bit slower and respectful of communities.

Thus, social connectedness and a slow and respectful approach to communities may be key ingredients in a positive experience of procedural fairness regardless of the top down policy framework in which such approaches to people are enacted (technocratic, or community-based).

5.5. The relative importance of procedural justice: regression analysis

In order to better understand procedural justice in the context of local approval of the overall wind energy development process, a five-stage linear regression model was run with the composite variable of local approval and support (see page 14) as the dependent variable. Independent variables include four procedural justice indexes by summing all items listed in the four categorical subsets of Table 2. The Cronbach (α) reliability scores of these new index variables are appropriate according to the cut-points of .70⁵ identified by Bland and Altman (1997): information (.879), opportunity (.829), dealing with developer (.853), and ability to affect change (.794). The regression analysis also included four distributive justice variables which measure perceived economic benefits. Lastly three sets of control variables (attitudes toward wind energy, provincial/local context, and demographic variables) were added to the model due to the effect some variables have shown in related research (i.e. health perception, property value loss). Some variables were also included because of ideas we had heard from participants (i.e. that proximity and/or number of turbines seen may influence support for siting processes). In the final model, only the 'ability to affect the outcome' indexed variable is significant ($p = .023$) among the group of four procedural justice indexes. The regression analysis⁶ also suggests perceptions of wind energy as an environmentally friendly technology, and the perceived importance of the issue of electricity production are positively associated with the dependent variable. Residents living in Ontario and closest to wind turbines were also more likely to disapprove of development processes Table 3.

6. Discussion

Through the lens of provincial wind energy policy, this paper presents empirical findings which highlight the importance of facility siting procedural justice in Ontario and Nova Scotia, Canada. In doing so, it adds to a small but growing literature that focuses specifically on planning and siting processes leading to wind turbine development [12,37,39]. Consistent with recent research, the results suggest that a lack of procedural justice elements – particularly the ability to affect facility outcomes – are important drivers of local views of wind energy siting processes and facility support. The focus on procedural justice here builds on recent literature exploring the multitude of factors (e.g., health risk perception, esthetic concerns) responsible for shaping public support for wind turbines in Canada [1,3,26] and beyond [15,25,27].

Aligning with what some of the literature says about community-based development, there did seem to be an overall greater satisfaction with both the overall process and procedural justice elements in Nova Scotia. Especially when looking at general siting approval, information sharing and dealing with the developer, Nova Scotia residents were relatively more pleased with how wind energy was planned in their

community. Part of this success may be attributed to the collaborative and participatory way in which policy was initially formed in Nova Scotia [8] – a kind of 'upstream' procedural justice that fed down tangible benefits to local communities. These particular elements of justice have long been recognized as playing important roles across various literatures related to development and public approval [36,73,74]. With reference to Arnstein's [41] ideas about citizen participation, the results here suggest more people from Nova Scotia in our study overall had a more positive attitude toward participation and their potential impacts on decisions [43,45].

Though Nova Scotia residents perceive there to be more procedural justice this may be only in a relative sense when compared with Ontario. That is, Nova Scotian residents scored their local facility siting below 50% (majority) agreement across most of our procedural justice measures. Additionally, the opinions expressed through interviews by those opposed to local wind energy development in the province echo many of the more common criticisms found in Ontario [38]. Indeed one of the few procedural justice variables measured in the survey that scored low and did not differ significantly by province was related to whether participation lead to meaningful changes. This suggests that residents of Nova Scotia were happier with the outcome of wind energy development even if they still felt somewhat powerless to change it. The importance of this idea throughout our study should not be entirely surprising as the potential to affect the outcome is a pillar of procedural justice [37] and is touted as the 'central variable' behind any estimation of citizen participation [75,76]. Given that so few residents within 2 km seemed to invest in a project, or even be aware of the possibility to invest suggests that top-down investment opportunities do not necessarily translate into real empowerment for the most directly affected residents.

The somewhat unexpected discontent with specific elements of procedural justice in Nova Scotia despite community ownership structures under COMFIT and CEDIFs may be due largely to specific aspects of implementation – including apparent "local" investment from investors several kilometers away from the developments. Of those respondents who were given the opportunity to invest in Nova Scotia, only 19.7% were even aware of such opportunities. In this context, we should continue to question the 'romanticization' of the term community-based (see [16–18,42]) – while future research that looks into who is actually investing in these projects is essential. These were not grassroots initiatives in the sense of small towns banding together to tell their governments they want favorable conditions to erect turbines, rather they are relatively larger municipalities and institutions responding to top-down policy and financial incentives. Policy documents shed some light on this issue. For example, under CEDIF regulations, a project's board of directors must include six people living in the local area – meaning anywhere in the municipality not necessarily in the area closest to development [77]. Additionally, there is a requirement that a project has at least 25 investors from the same 'local area'. The problem may lie in the fact that municipalities in Nova Scotia can be very large – up to 5400 km² in size [78]. This highlights a key disconnect between the way the policy defines community – i.e. in a very broad way – and the way we have sampled in the "local community" of 2 km. Neither is entirely adequate, but our sampling was intentional to underscore that procedural and (spatial) distributive justice must be connected. Thus, how researchers, policy-makers, and developers define "community" needs to be scrutinized to understand whether the promise of "community-based development" is being realized; at least under what contingencies.

The disconnect between who lives with and who is making decisions behind wind energy development is something others have claimed to be at the root of discontent with the siting process in Ontario and elsewhere [1]. Even when developers offer the majority (51%) of shares of a project to the local community, our findings suggest it is still 'outsiders' who are the ones actually investing in and controlling these projects. Even more concerning is the general lack of awareness we saw

⁵ Values of Cronbach's alpha greater than .70 in a survey are said to a good indication that items are measuring the same underlying construct and thus summing these responses is appropriate.

⁶ When only local development approval was used as the DV, province dropped from the list of significant independent variables. All others including 'ability to affect the outcome' and distance to the closest wind turbine remained significant.

Table 3
Five-stage regression analysis ($n = 240$). (Indexed ‘approval of local wind energy development’ as dependent variable^{a,b})

	Model 1 ($r^2 = .698$; SE = 1.044)	Model 2 ($r^2 = .717$; SE = 1.469)	Model 3 ($r^2 = .784$; SE = 1.920)	Model 4 ($r^2 = .887$; SE = 2.577)	Model 5 ($r^2 = .891$; SE = 2.879)
<i>Procedural justice (indexes)^c</i>					
Index – information	.318	.372*	.175	.105	.111
Index – opportunity	-.169	-.208	-.128	.067	.054
Index – dealing with developer	.246	.135	-.009	-.065	-.028
Index – ability to affect outcomes	.463**	.427**	.366*	.319**	.330*
<i>Distributive justice</i>					
Distribution of positive impacts		.217	.242	.105	.093
All residents have been adequately compensated for negative impacts		-.025	-.069	-.108	-.153
More financial benefits should be given to the community		.063	.019	.018	-.004
More financial benefits should be given to residents close to turbines		.028	.036	-.048	-.023
<i>Attitudes toward wind energy^c</i>					
Wind energy is environmentally friendly			.297**	.323**	.343**
Wind turbines are an unacceptable threat to human health			-.173	-.152	-.124
Wind power projects lower property values			-.029	-.076	-.086
<i>Provincial/local context</i>					
Ontario (Nova Scotia)				-.266*	-.244*
Importance of electricity issues in my province				.147*	.166**
Community ownership (%)				-.053	-.102
Approximate distance to closest turbine				-.191**	-.202**
Number of turbines seen from home				-.043	-.080
Size of project (number of turbines)				-.126	-.114
<i>Demographic variables</i>					
Age					.050
Political view					-.065
Education					.014
Annual family income					-.033

^a The dependent variable was an indexed variable combining “Overall I approve of the way wind energy development was planned and built in my community” and “I support the local wind energy project in my community” (Cronbach alpha = .915. Both questions were asked as Likert-scale responses from strongly agree (1) to strongly disagree (5)).

^b Most independent variables were calculated through the survey using a Likert scale (1 = strongly agree; 5 = strongly disagree). Exceptions include dummy variables (province and gender), scale data (community ownership %, project size) and other interval data (distance to turbine, number of turbines seen, age, political view, education and income).

^c The first two blocks of indexed variables were chosen because of suggestions in the literature that justice is an important predictor of turbine development approval (.378–.786; $p = .00$). The final three blocks were added as controls. Values given are standardized regression coefficients.

* Values are statistically significant at the $p = .05$ level.

** Values are statistically significant at the $p = .01$ level.

from those who were theoretically given opportunities to invest in their local project. Diffusing investment over vast geographic areas may actually perpetuate injustices when those living closest to turbines continue to experience the negative externalities while reaping few of the benefits [35]. The pragmatics of finding sufficient numbers of investors may warrant a rethinking of the term “community” whereby it may be more appropriate to call the program a regional or municipal-based program.

Though top-down, technocratic approaches have been commonly used to create high levels of deployment of wind and other renewable energy technologies [1,11,79] – the long-term costs to communities and the industry are still somewhat uncertain. In a time of much needed action on climate change, the expedited advancement of low-carbon technologies by traditional developers is regarded as positive in many ways. However, development that lacks procedural justice is not only unfair to local communities, but associated opposition movements that have developed in their wake may threaten the long-term sustainability of the wind industry if they trickle up into regional (e.g., provincial) politics where the policies originate [80].

While procedural justice elements are important correlates of local responses to wind energy siting, we stress that these ideas only tell part of the story. To echo the warnings of recent research on distributive justice [9,39] we must be careful not to ascribe too much of a causal relationship between any variables relating to turbines and siting. Our work is suggestive, along with others, that procedural justice issues are

at least as pertinent as distributive justice issues [12,27,38,39] yet the final regression model shows that other contextual variables are significant as well and that considerable variance is still left “unexplained”. This is why we encourage ongoing interview work to tease out the contingencies of experiences of wind energy siting.

Related to the regression analysis, the composite dependent variable was a measure of overall satisfaction with the siting process *and* support for the local turbine development. This contrasts with other studies that have used local support alone as the dependent variable; a seemingly subtle, but we suspect, important distinction (see [9]). Perceptions of wind energy as environmentally friendly, the importance of electricity, province of residence, and distance from the closest turbine indicate that some context-specific explanations for differences in support are also playing important roles. There was also evidence presented that showed that ‘social connectedness’ and ‘respectful development’ in Nova Scotia may have led to better experiences for those living close to wind turbines. These types of ideas, alongside policy and associated planning and development processes, should be noted by researchers going forward.

It is somewhat surprising that the size the developments does not seem to play a significant role in the sense that most (6/7) developments in Nova Scotia were comprised of six turbines or less. Meanwhile, the average development in Ontario contained 11 turbines. Within the regression, we attempted to control for this through the *number of turbines seen from home*, and *size of the project* variables (neither

statistically significant in the regression) – though this may not have accurately captured residents' perceptions of this potentially important idea. At least one study suggests that clustering may be important [30], while height and juxtaposition in the landscape may also play roles [81]. In part because turbine capacity was relatively consistent between provinces, the size of the turbines was relatively homogenous. However as turbines get larger, it may become necessary to account for this. Future research should keep these kinds of place-based variables in mind especially when looking to compare responses across jurisdictions.

7. Conclusions and policy implications

Despite the benefits of technologies like wind energy, for low-carbon electricity to meet the definition of *sustainable* and prosper in the long term, development must respect local communities where projects are built, particularly the most directly impacted residents in those communities. Indeed, a lack of local support can be indicative of environmental injustices which can also create social barriers that slow or stop the progress of renewable energy. If governments are to 'stem the tide' of unwilling hosts, they must better understand the multitude of factors that correlate with support and opposition. In this study, one specific aspect of procedural justice was found to be a key: the ability for residents to affect outcomes. It is unclear whether Nova Scotia's top-down investment models made residents in the 2 km setback zone feel more empowered or if the reboot of the policy to be community-oriented merely fostered a positive predisposition to siting. Given that there is less than majority agreement that residents positively experienced the siting process suggests it may be a combination of the two.

At the outset of this study, we argued for a more nuanced understanding of procedural justice – and thus measured the concept using a range of measures and which were distilled into four different indexes. Though all siting processes in our study, even those that were ostensibly community-based, score low on most of our measures it is control over decision-making that separates those supportive and unsupportive of the local turbine siting processes. This suggests that while greater control over decision-making is paramount, issues related to information sharing, opportunities to participate, and the resident-developer relationship are also important, particularly when the ability to change or prevent a turbine development is low.

Our study also provides some evidence that well (re)designed state-run policy programs may positively orient residents toward specific events like open houses and more general, procedural experiences of wind energy development. While our results clearly suggest room for improvement in both provinces, local approval of wind energy development was much higher under the less technocratic, bottom-up approaches (including COMFIT) of Nova Scotia. At least some of this differentiation is likely to do with the province's community-based initiatives which led to better experiences of procedural justice. Yet for the most part, these positive experiences still fell short in terms of the ability to affect change. As Arnstein [41] writes, "There is a critical difference between going through an empty ritual of participation and having the real power needed to affect the outcomes of the process" (p. 216). Hosting open houses, Q&A sessions, or public consultation sessions are a good start, yet as participants in our study made clear, the absence of any real ability to affect the outcome is what people are really concerned with. When people take the time to share their opinions but nothing is done about them, there is an understandable degree of frustration in the process. At the very least the parameters and goals of public engagement need to be clear – what aspects of the project are alterable through such interactions.

True community ownership – whereby locals *actually* own their project – may be the answer for jurisdictions hoping to *increase* local acceptance. However if handing over full decision-making power to local communities is too much for states to bear, authorities should focus on allowing councils and residents at least some degree of control

to shape the characteristics of their local development. While the ability to say "no" is clearly what some we spoke with wanted, allowing all stakeholders the opportunity to come together with traditional developers and decide where or how (not if) turbines are built may be all that states are willing to yield. Policy makers need to recognize though that this is a relatively weak approach to community engagement and may have limited positive impacts. Nova Scotia got something right, but at the end of the day there are still limitations and room for improvement in terms of procedural justice. Going forward, whether through actual community-ownership or other initiatives, policy should also be written in a way that incentivizes residents and councils to say "yes" in a similar way that small communities often look to attract new business by adjusting land use zoning requirements. In some cases, this may require developers to act more like facilitators – allowing rural communities to control and benefit from an advancement of a low-carbon energy future.

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References

- [1] C. Walker, J. Baxter, D. Ouellette, Adding insult to injury: the development of psychosocial stress in Ontario Wind Turbine communities, *Soc. Sci. Med.* (2015).
- [2] C. Walker, J. Baxter, S. Mason, I. Luginiaah, D. Ouellette, Wind energy development and perceived real estate values in Ontario, Canada, *AIMS Energy* 2 (2333–8334) (2014) 424–442.
- [3] S. Fast, W. Mabee, J. Baxter, T. Christidis, L. Driver, S. Hill, M. Tomkow, Lessons learned from Ontario wind energy disputes, *Nat. Energy* 1 (2016) 15028.
- [4] E. Songsore, M. Buzzelli, Ontario's experience of wind energy development as seen through the lens of human health and environmental justice, *Int. J. Environ. Res. Public Health* 13 (7) (2016) 684.
- [5] D. McRobert, J. Tennent-Riddel, C. Walker, Ontario's Green Energy and Green Economy Act: why a well-intentioned law is mired in controversy and opposed by rural communities, *Renew. Energy Law Policy Rev.* 7 (2) (2016) 91–112.
- [6] CBC, Wind turbine debate sparked in Ontario election, CBC News (2011) Retrieved from <http://www.cbc.ca/news/>.
- [7] OWR, Ontario Wind Resistance – Not a Willing Host, (2016) <http://ontario-wind-resistance.org/not-a-willing-host/>.
- [8] M. Adams, D. Wheeler, G. Woolston, A participatory approach to sustainable energy strategy development in a carbon-intensive jurisdiction: the case of Nova Scotia, *Energy Policy* 39 (5) (2011) 2550–2559.
- [9] C. Walker, J. Baxter, "It's easy to throw rocks at a corporation": wind energy development and distributive justice in Canada, *J. Environ. Policy Plan.* (2017) 1–15.
- [10] T. Vass, What is the significance of "community" wind energy? The influence of local project initiation, participation, and investment on local perceptions of small-scale wind energy projects in Nova Scotia, (2013).
- [11] C. Bohn, C. Lant, Welcoming the wind? Determinants of wind power development among US states, *Prof. Geogr.* 61 (1) (2009) 87–100.
- [12] G. Ottinger, T. Hargrave, E. Hopson, Procedural justice in wind energy facility siting: Recommendations for state-led siting processes, *Energy Policy* 65 (2014) 662–669.
- [13] M. Aitken, S. McDonald, P. Strachan, Locating 'power' in wind power planning processes: the (not so) influential role of local objectors, *J. Environ. Plan. Manag.* 51 (6) (2008) 799–888.
- [14] G. Richards, B. Noble, K. Belcher, Barriers to renewable energy development: a case study of large-scale wind energy in Saskatchewan, Canada, *Energy Policy* 42 (2012) 691–698.
- [15] C.R. Warren, M. McFadyen, Does community ownership affect public attitudes to wind energy? A case study from south-west Scotland, *Land Use Policy* 27 (2) (2010) 204–213.
- [16] N. Simcock, Procedural justice and the implementation of community wind energy projects: a case study from South Yorkshire, UK, *Land Use Policy* 59 (2016) 467–477.
- [17] G. Walker, P. Devine-Wright, S. Hunter, H. High, B. Evans, Trust and community: exploring the meanings, contexts and dynamics of community renewable energy, *Energy Policy* 38 (6) (2010) 2655–2663.

- [18] G. Bristow, R. Cowell, M. Munday, Windfalls for whom? The evolving notion of 'community' in community benefit provisions from wind farms, *Geoforum* 43 (6) (2012) 1108–1120.
- [19] M.J. Pasqualetti, Wind energy landscapes: society and technology in the California desert, *Soc. Nat. Resour.* 14 (8) (2001) 689–699.
- [20] S. Krohn, S. Damborg, On public attitudes towards wind power, *Renew. Energy* 16 (1) (1999) 954–960.
- [21] G. Walker, Renewable energy and the public, *Land Use Policy* 12 (1) (1995) 49–59.
- [22] P. Devine Wright, Beyond NIMBYism: towards an integrated framework for understanding public perceptions of wind energy, *Wind Energy* 8 (2) (2005) 125–139.
- [23] M. Wolsink, Wind power implementation: the nature of public attitudes: equity and fairness instead of 'backyard motives', *Renew. Sustain. Energy Rev.* 11 (6) (2007) 1188–1207.
- [24] M. Wolsink, Wind power and the NIMBY-myth: institutional capacity and the limited significance of public support, *Renew. Energy* 21 (1) (2000) 49–64.
- [25] M. Aitken, Why we still don't understand the social aspects of wind power: a critique of key assumptions within the literature, *Energy Policy* 38 (4) (2010) 1834–1841.
- [26] J. Baxter, R. Morzaria, R. Hirsch, A case-control study of support/opposition to wind turbines: perceptions of health risk, economic benefits, and community conflict, *Energy Policy* 61 (2013) 931–943.
- [27] C. Gross, Community perspectives of wind energy in Australia: the application of a justice and community fairness framework to increase social acceptance, *Energy Policy* 35 (5) (2007) 2727–2736.
- [28] C. Haggett, Understanding public responses to offshore wind power, *Energy Policy* 39 (2) (2011) 503–510.
- [29] N. Hall, P. Ashworth, P. Devine-Wright, Societal acceptance of wind farms: analysis of four common themes across Australian case studies, *Energy Policy* 58 (2013) 200–208.
- [30] C. Walker, J. Baxter, D. Ouellette, Beyond rhetoric to understanding determinants of wind turbine support and conflict in two Ontario, Canada communities, *Environ. Plan. A* 45 (2014).
- [31] G. Walter, H. Gutscher, Public Acceptance of Wind Energy and Bioenergy Projects in the Framework of Distributive and Procedural Justice Theories: Insights from Germany, Austria and Switzerland, *The Advisory House/Universität Zürich*, 2010.
- [32] J. Zoellner, P. Schweizer-Ries, C. Wemheuer, Public acceptance of renewable energies: results from case studies in Germany, *Energy Policy* 36 (11) (2008) 4136–4141.
- [33] S.L. Cutter, Race, class and environmental justice, *Prog. Hum. Geogr.* 19 (1995) 111.
- [34] R.W. Lake, Volunteers, NIMBYs, and environmental justice: dilemmas of democratic practice, *Antipode* 28 (2) (1996) 160–174.
- [35] L.W. Cole, S.R. Foster, *From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement*, NYU Press, 2001.
- [36] D. Schlosberg, *Defining Environmental Justice: Theories, Movements, and Nature*, (2007).
- [37] C. Gross, Community perspectives of wind energy in Australia: The application of a justice and community fairness framework to increase social acceptance, *Energy Policy* 25 (5) (2007) 2727–2736.
- [38] A.A. Jami, P.R. Walsh, The role of public participation in identifying stakeholder synergies in wind power project development: the case study of Ontario Canada, *Renew. Energy* 68 (2014) 194–202.
- [39] R. Cowell, G. Bristow, M. Munday, Acceptance, acceptability and environmental justice: the role of community benefits in wind energy development, *J. Environ. Plan. Manag.* 54 (4) (2011) 539–557.
- [40] J. Firestone, W. Kempton, M.B. Lillie, K. Samoteskul, Public acceptance of offshore wind power: does perceived fairness of process matter? *J. Environ. Plan. Manag.* 55 (10) (2012) 1387–1402.
- [41] S.R. Arnstein, A ladder of citizen participation, *J. Am. Inst. Plan.* 35 (4) (1969) 216–224.
- [42] G. Walker, P. Devine-Wright, Community renewable energy: what should it mean? *Energy Policy* 36 (2) (2008) 497–500.
- [43] N. Dennis, *Public Participation and Planners' Blight* vol. 3, no. 8, Faber, London, 1972.
- [44] M.B. Lane, Public participation in planning: an intellectual history, *Aust. Geogr.* 36 (3) (2005) 283–299.
- [45] C. Pateman, *Participation and Democratic Theory*, Cambridge University Press, 1970.
- [46] M. Painter, Participation and power, *Citizen Participation in Government* (1992) 21–36.
- [47] T. Christidis, J. Law, Annoyance, health effects, and wind turbines: exploring Ontario's planning processes, *Can. J. Urban Res.* 21 (1) (2012) 81.
- [48] R. Hindmarsh, C. Matthews, Deliberative speak at the turbine face: community engagement, wind farms, and renewable energy transitions, in Australia, *J. Environ. Policy Plan.* 10 (3) (2008) 217–232.
- [49] J.C. Rogers, E.A. Simmons, I. Convery, A. Weatherall, Public perceptions of opportunities for community-based renewable energy projects, *Energy Policy* 36 (11) (2008) 4217–4226.
- [50] Z.M. Wright, A voice for the community: public participation in wind energy development, *Dalhousie J. Interdiscip. Manag.* 8 (1) (2012).
- [51] S. Fast, W. Mabee, Place-making and trust-building: the influence of policy on host community responses to wind farms, *Energy Policy* 81 (2015) 27–37.
- [52] S.D. Hill, J.D. Knott, Too close for comfort: social controversies surrounding wind farm noise setback policies in Ontario, *Renew. Energy Law Policy Rev.* (2010) 153.
- [53] L.C. Stokes, The politics of renewable energy policies: the case of feed-in tariffs in Ontario, Canada, *Energy Policy* 56 (2013) 490–500.
- [54] A. Yatchew, A. Baziliauskas, Ontario feed-in-tariff programs, *Energy Policy* 39 (7) (2011) 3885–3893.
- [55] P. Mulvihill, M. Winfield, J. Etcheverry, Strategic environmental assessment and advanced renewable energy in Ontario: moving forward or blowing in the wind? *J. Environ. Assess. Policy Manag.* 15 (2) (2013) 1340006.
- [56] W.E. Mabee, J. Mannion, T. Carpenter, Comparing the feed-in tariff incentives for renewable electricity in Ontario and Germany, *Energy Policy* 40 (2012) 480–489.
- [57] Ontario Power Authority, *Feed-In Tariff Program: Program Overview*, (2010) http://fit.powerauthority.on.ca/Storage/11160_FIT_Program_Overview_August_new_price_version_1.3.1_final_for_posting-oct_27.pdf.
- [58] Nova Scotia, *Community Feed-In Tariff Program: Facts*, (2013) http://nsrenewables.ca/sites/default/files/comfit_backgroundunder.pdf.
- [59] Nova Scotia, *Guide: COMFIT Nova Scotia Community Feed-In Tariff*, (2011) <https://energy.novascotia.ca/sites/default/files/files/COMFIT%20Guide.pdf>.
- [60] J. Lipp, É. Lapierre-Fortin, J.J. McMurtry, *Renewable Energy Co-op Review: Scan of Models & Regulatory Issues*, (2012).
- [61] I. Morin, An exploration of the range in public perceptions of small-scale and large-scale wind power developments in Nova Scotia, Canada (Doctoral dissertation), (2014).
- [62] L.K. Soots, *Supporting Innovative Co-Operative Development: The Case of the Nova Scotia Co-operative Development System*, BC-Alberta Social Economy Research Alliance, 2007.
- [63] D. Dion, Evidence and inference in the comparative case study, *Necessary Conditions: Theory, Methodology, and Applications*, (2003), pp. 95–112.
- [64] R.K. Yin, *Applications of Case Study Research*, Sage, 2011.
- [65] Y.S. Lincoln, Emerging criteria for quality in qualitative and interpretive research, *Qual. Inq.* 1 (3) (1995) 275–289.
- [66] G. Guest, K.M. MacQueen, E.E. Namey, *Applied Thematic Analysis*, Sage, 2011.
- [67] G.W. Ryan, H.R. Bernard, Techniques to identify themes, *Field Methods* 15 (1) (2003) 85–109.
- [68] M.L. Finucane, P. Slovic, C.K. Mertz, J. Flynn, T.A. Satterfield, Gender, race, and perceived risk: the 'white male' effect, *Health Risk Soc.* 2 (2) (2000) 159–172.
- [69] V. Blanes-Vidal, J. Schwartz, Wind turbines and idiopathic symptoms: the confounding effect of concurrent environmental exposures, *Neurotoxicol. Teratol.* 55 (2016) 50–57.
- [70] E.C. Larson, R.S. Krannich, "A Great Idea, Just Not Near Me!" Understanding public attitudes about renewable energy facilities, *Soc. Nat. Resour.* 29 (12) (2016) 1436–1451.
- [71] T. Christidis, C. Paller, S. Majowicz, P. Bigelow, A. Wilson, S. Jamal, Creating and testing a survey to assess the impact of renewable energy technologies on quality of life, *Environmental Health Review* 56 (04) (2014) 103–111.
- [72] E.S. Lee, R.N. Forthofer, *Analyzing Complex Survey Data* vol. 71, Sage Publications/Altman, D., Bland, J. (1997). Cronbach's alpha. *Bmj*, 314, 572., 2005.
- [73] A. Jobert, P. Laborgne, S. Mimler, Local acceptance of wind energy: factors of success identified in French and German case studies, *Energy Policy* 35 (5) (2007) 2751–2760.
- [74] J. Baxter, A case study of intra-community conflict as facility impact, *J. Environ. Plan. Manag.* 49 (3) (2006) 337–360.
- [75] P. Gipe, *Wind Energy Comes of Age* vol. 4, John Wiley & Sons, 1995.
- [76] D.J. Amy, *The Politics of Environmental Mediation*, University Press, Columbia, 1987.
- [77] T. Bedford, J. Clark, C. Harrison, Limits to new public participation practices in local land use planning, *Town Plan. Rev.* 73 (3) (2002) 311–331.
- [78] Nova Scotia, *Community Economic Development Investment Funds*, (2016) Retrieved from: <http://novascotia.ca/business/CEDIF/>.
- [79] *Historica Canada, Cities and Populated Places: Halifax*, (2016) <http://www.thecanadianencyclopedia.ca/en/article/halifax/>.
- [80] M. Wolsink, Near-shore wind power – protected seascapes, environmentalists' attitudes, and the technocratic planning perspective, *Land Use Policy* 27 (2) (2010) 195–203.
- [81] J. Firestone, A. Bates, L.A. Knapp, See me, Feel me, Touch me, Heal me: wind turbines, culture, landscapes, and sound impressions, *Land Use Policy* 46 (2015) 241–249.