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Who Has Seen the Wind Benefits? Impacts of Ontario Green Energy Policy on Municipal Community Benefit Agreements from Large Wind Energy Projects

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ABSTRACT

The province of Ontario has become Canada's largest wind energy market. This was a result of distinct policies established by the provincial government to encourage renewable energy developments as part of its power supply system. Using distributive justice as a lens, this study aims to clarify how wind energy policy design influences community outcomes for municipalities that host wind turbine projects. Community benefit agreements between municipalities and wind project developers are a prominent tool for distributing financial benefits to local populations and these were used throughout Ontario as part of the wind energy development process. A comparative analysis is undertaken to examine the characteristics of three distinct Ontario policy periods against the measured outcomes of community benefit agreements collected from host municipalities of large wind projects. An increase in use and value of community benefit agreements is observed across all three policy periods. This corresponds with expectations of policy characteristics relating to public and municipal opposition and familiarity of the development process by municipalities. The observed influence was less consistent for characteristics associated with power contract rates, local versus central planning authority, and procurement incentives. The results also quantified the financial contributions of industrial wind turbine projects to local communities on an individual municipal basis. The findings of this study will help understand how policies impact community benefits, can inform future wind energy programs, and creates a reference to increases the transparency of financial contributions from wind energy projects to Ontario municipalities.

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INTRODUCTION

In 2003, the Ontario government began promoting a policy of renewable energy development as a viable way forward for provincial electricity generation. By creating policy environments to support new 'green' energy projects, the province has seen certain sectors of renewable energy grow from nearly non-existent levels to wide spread implementation. As a major component of the province's green energy plan, the construction of large-scale industrial wind projects has garnered particular attention due to their prevalence and visibility, as well as a number of controversial implications affecting mainly rural municipalities and residents.

Municipal governments were central to the narrative of wind energy growth in Ontario. They exercised varying levels of approval authority within the development process and their direct engagement with developers influenced the successful implementation of wind energy projects in their communities. This occurred through mechanisms such as municipal-provincial relations, negotiations with developers, and project appeals within the environmental approval process.

Municipalities also received pressures from various actors to support or oppose wind project developments. Anti-wind organizations lobbied local politicians and councils to stand against wind projects, a position that was juxtaposed by landowners who stood to receive income from property rentals and developers who promoted economic benefits through community employment, partnerships, or vibrancy funds.

Community benefit agreements are a commonly used device when developing large scale infrastructure projects with negative externalities, such as industrial wind energy developments. They typically involve financial contributions to the host community above and beyond any landowner payments or mandated taxes. These contributions can be viewed as 'goodwill' gestures or compensatory mitigation, depending on one's perspective toward the subject development. While benefit agreements are often used as a mechanism by developers to garner local support for potentially controversial projects, they also present an opportunity for municipalities to capitalize on available funding and share benefits more widely throughout the community. However, there is no universally adopted method to apply or administer community benefit agreements in the context of wind energy projects and distributive inequities have been observed in some studied regions (Munday, Bristow, & Cowell, 2011).

The large scale implementation and rapidly changing presence of the renewable energy industry in Ontario from 2003 to 2018 created a variety of political and public policy challenges that have been examined academically (Fast & Mabee, 2015; Stokes L. C., 2016; Christidis, Lewis, & Bigelow, 2017; Walker & Baxter, 2017a; Bues, 2018). Current provincial leadership in Ontario has placed a pause on green energy program initiatives. This creates a chance to retrospectively analyze the previous government's policy impacts.

This paper examines how Ontario's distinct policy periods and approaches to renewable energy implementation influenced the benefits received by municipalities that became host to industrial wind turbine projects. Community benefit agreements

were prominently used in the Ontario wind energy development process, however, a research lacuna exists that limits our understanding of their application in the Ontario context. The potential for community benefit agreements to act as a new revenue stream is an important consideration for would-be host municipalities faced with future wind developments. It is similarly critical for policy makers to know how provincial investments in green energy were dispersed at the local level via private wind development projects.

Through the following sections, I will review the origins and timeline of programs created through Ontario's renewable energy policy environment and outline in more detail how the acquisition and construction of wind energy projects was handled in the province. I will then introduce the concept of distributive justice and identify commonly applied mechanisms used in large-scale wind developments processes to address relationships with the local community. The focus will then narrow to defining community benefit agreements, why they are important in Ontario, and how their use has been promoted and observed in other jurisdictions with wind energy projects.

Drawing on the academic literature, an overall hypothesis is created with five sub-hypotheses statements based on characteristics expected to influence community benefit agreements within Ontario. After outlining the methods undertaken to identify and collect community benefit agreements with Ontario municipalities, the data is organized and related back to each of the sub-hypotheses based on observations. Finally, I will discuss the relevance of these findings with respect to Ontario municipalities and how they can inform future policy decisions.

BACKGROUND

Progression of Ontario Green Energy Policy

Between 2003 and 2018, the province of Ontario established several green energy programs where independent project owners were provided the opportunity to enter into renewable energy supply contracts with the provincial electrical regulator, the Ontario Power Authority (OPA) - later the Independent Electricity System Operator (IESO). Program elements, such as procurement method, price structure, and incentives were adjusted through the policy environments, resulting in varying levels of attraction from large and small developers to construct renewable energy projects. Although various electrical generating sources, such as solar, hydro, biomass, bio-fuel, landfill gas, and bio-gas, were included in the renewable energy programs, wind energy played a prominent role in the provincial strategy throughout the policy timeline. The following section provides a chronology outlining the major policy instruments used and the interaction between stakeholders, industry, and local and provincial governments. Following that, a closer look will be taken specifically at wind energy and the resultant impacts of its increased presence in Ontario.

In 2003, the province of Ontario, under a majority Liberal government, officially adopted policy direction to encourage electricity generation from renewable sources by setting targets to increase green energy production by 5% of the total provincial generating capacity, approximately 1350 megawatts (MW)[1], by 2007. Wind, hydro, and renewable biomass were identified as key areas for expansion within the electrical generating system. At the same time, the province began to take steps

[1] Generally equivalent to powering 350,000 homes (Ontario, 2010).

toward closing its five coal-fired electrical generation facilities within the same timeline. These two measures were promoted as moving Ontario toward cleaner, 'greener' energy sources (Ontario, 2019).

Several other global jurisdictions, particularly in Western Europe, had already initiated similar green energy endeavours and could be looked to for examples of policy models. These ranged from state owned projects to neo-liberal systems that attracted private developers through two common methods: feed-in tariffs that provided preset fixed dollar rates to perspective developers for electrical generation; and open-market bidding that saw developers establish competitive electrical rates as part of project proposals. To achieve its goal, Ontario policy makers created the Renewable Energy Supply (RES) program that used an open-market auction of new network generating capacity. This system invited private developers to bid on a set quota of electrical production made available exclusively for renewable energy projects. Electricity supply contracts were offered under three rounds of auction that took place between 2004 and 2007, titled RES I (2004), RES II (2005), and RES III (2007).

Toward the end of the RES program, from 2006 to 2008, an alternate system of procurement was created for smaller green energy projects. This program only targeted developments up to 10 MW in size and was called the Renewable Energy Standard Offer Program (RESOP). The RESOP differed from the RES in that it utilized a feed-in tariff model, as opposed to a competitive bidding process, that set fixed electrical rates for private project applicants. Electrical generation rates for wind power under the RESOP were set significantly higher (11 cents per kilowatt-

hour) compared to those awarded under the RES (8.0 to 8.6 cents per kilowatt-hour) (Holburn, Lui, & Morand, 2010). These rates were attractive and made the RESOP susceptible to large-scale developers breaking up projects into multiple smaller components in order to meet the 10 MW cap and participate in the program (Holburn, Lui, & Morand, 2010; Loudermilk, 2017).

By the time the RES and RESOP ended in 2008, Ontario had seen a significant uptake in renewable energy activity, although it ultimately fell short of its stated goals, meeting only 60% of the 1350 MW target (Loudermilk, 2017). Public reception of these projects was mixed, especially in those communities that played host to the new developments. While some municipalities welcomed the potential for economic gains to local land owners and promised employment, others "vigorously resisted local zoning approvals" (Loudermilk, 2017, p. 2) and many of the projects were never constructed.

In response to local resistance and to further expand Ontario's green energy market, the province created and passed the *Green Energy and Green Economy Act* in 2009, also commonly referred to as the Green Energy Act (GEA). Then Premier and leader of the provincial Liberal Party, Dalton McGuinty, justified this move by stating:

> *"We're going to find a way through this new legislation to make it perfectly clear that NIMBYism will no longer prevail when it comes to putting up wind turbines, solar panels and bio-fuel plants…We need those jobs. We need clean electricity, and we need to assume our full responsibility in the face of climate change* (The Canadian Press, 2009)*."*

This legislation established a top-down policy environment to streamline renewable energy project approvals, which would be controlled by the province. This meant that planning approvals were removed from the local municipal authority and were now granted through a special provincial Renewable Energy Approval (REA) process.

Coupled with the introduction of the GEA, a second, more ambitious phase of renewable energy acquisition was developed and promoted as the Feed-in-Tariff (FIT) program. Just under 5,500 MW of contracted capacity was offered in five rounds (labeled version FIT 1 through FIT 5) between 2009 and 2016 (IESO, 2020). At its onset, the program awarded power contract agreements to developers on a "first-come, first-serve basis" to achieve set capacity implementation targets (Fast, et al., 2016). After award of the power agreement, successful projects were then required to satisfy the provincial REA requirements, which included local community engagement, before proceeding to construction.

The FIT program guaranteed higher set electrical rates to developers than previously seen under the RES and RESOP; a base rate was set for wind energy contracts at 13.5 cents per kilowatt-hour under FIT 1 and the later FIT 2 to FIT 5 programs had commitments of between 11.5 and 12.8 cents per kilowatt-hour (Loudermilk, 2017). These higher set contract rates, along with a new streamline approval process, attracted significant investment from new green energy developers under the FIT program.

The FIT program also introduced a unique consideration from its predecessors in that it sought to encourage local participation by providing pricing bonuses to the

base electrical contract rate for projects that had Indigenous or community partners. The bonuses were weighted based on percent community control of the project, designed to "encourage local partnerships and to help Aboriginal and community partners maximize their equity share (Ontario Power Authority, 2010, p. 9)." Wind developments were able to earn up to a maximum of 1.5 cents per kilowatt-hour for Indigenous control and 1.0 cent per kilowatt-hour for community control in projects.

During the same time period that FIT was active, the government also directly negotiated the Green Energy Investment Agreement (GEIA) with developers for an additional 2,500 MW of wind and solar production. Although these projects circumvented the FIT application process, and were awarded through ministerial directive, they received the FIT price structure (Duguid, 2010).

In 2014 the province again adjusted the acquisition process for renewable energy projects. The FIT program was retained for projects smaller than 500 kW in size and a new Large Renewable Procurement (LRP) program was established for developments that exceeded this threshold. The LRP program incorporated notable changes from the previous FIT processes.

The first change was that the new cost structure designed for the LRP program moved away from the standard offer, feed-in tariff systems previously employed and returned to a competitive market-based price system. Prospective developers responded to a request-for-proposal (RFP), in which they were required to submit their own electrical contract price for the project. Proposals would then be ranked

and scored based on several factors, including the value of the power purchase agreement.

Second, as part of the LRP RFP, "Community Engagement" rating points could be earned for projects that demonstrated the following: municipal council or First Nation support resolutions; municipal host agreements that clarify expectations, responsibilities and costs related to the project; support from landowners abutting wind turbine properties; and Indigenous participation or partnership in the project (Ministry of Energy, 2015). Although these points did not provide financial benefits, as noted in the FIT system, they did factor into the selection criteria to increase the likelihood of being awarded a contract.

Lastly, project developers were required to initiate consultation through meetings with both the host municipality(ies) and the public prior to submitting a project proposal. This was a marked difference from the post-award consultation requirements identified in the FIT process.

The LRP program was rolled out in two phases across 2015 and 2016. LRP I resulted in successful proponents for 16 renewable energy projects, totaling 455 MW (5 wind contracts, 300 MW total). LRP II was initiated, but cancelled when the Minister of Energy announced its suspension on September 27, 2016 (IESO, 2020).

Following the 2018 provincial election, the newly elected government, formed by the Ontario Progressive Conservative Party, acted on election promises to end the GEA that same year. With this repeal, the government was able to stop project approvals

and planning authority for renewable energy projects was returned to municipalities, effectively putting a halt to green energy development in Ontario (Ontario, 2018).

Wind Energy Implementation and Reception in Ontario

Although the province's green energy programs supported a number of renewable technology sources, much of the public focus resided in the area of wind power. Wind project developments were a highly visible representation of the provincial policy goals and the source of wide-spread land use planning discussions, particularly throughout the predominantly rural communities where they were located. Ontario's wind energy projects consist of construction of anywhere between one to over one hundred industrial wind turbine towers, in some cases, standing over 150 metres high. Some municipalities were host to multiple projects with hundreds of turbine sites that were often accompanied by kilometres of transmission towers to connect the projects to the grid. The following section outlines wind project implementation within Ontario's renewable policies in greater detail, how they were received by municipalities and special interest groups, and the province's response.

In 12 years, Ontario went from being a province with nearly zero wind presence to becoming Canada's largest wind energy market, hosting 96 projects totaling more than 2,500 constructed wind turbines. This constituted over 5000 MW of potential electrical generation - 12% of Ontario's installed capacity (CanWEA, 2019; IESO, 2019). The majority of the wind energy generation capacity was contracted through the three RES auctions, FIT 1 (including the GEIA, which was awarded through ministerial directive and used the FIT structure and pricing), and LRP I processes. A

timeline of the primary periods and processes for wind implementation in Ontario are identified in Figure 1.

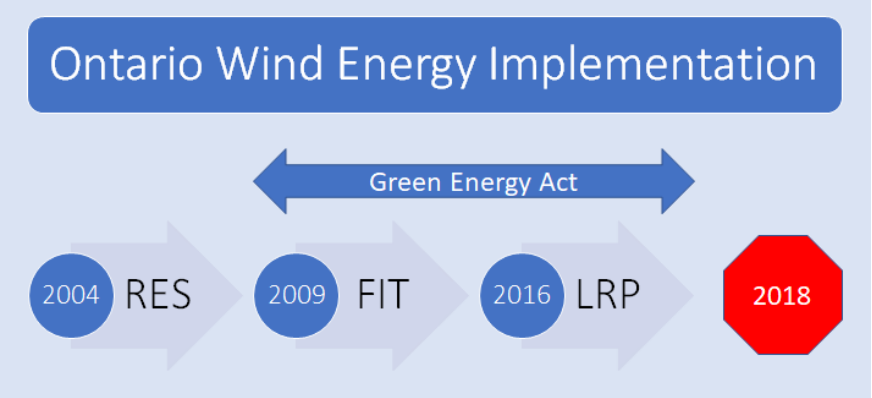

Figure 1: Timeline of wind energy implementation in Ontario.

Initially, the provincial direction to increase renewable energy sources received widespread public support. Polling carried out in 2010 indicated that 89 percent of Ontarians "supported wind energy in their region" and 86 percent felt that their "municipal government should encourage and facilitate wind energy development (Ipsos Reid, 2010; Baxter, Morzarina, & Hirsch, 2013)." Despite these indicators, grass roots opposition began to emerge in impacted municipalities or areas 'threatened' by wind development. "By the 2011 election, every district with a wind turbine had at least one anti-wind group (Stokes L. C., 2016, p. 962)."

The introduction of the GEA in 2009 was framed by the Province as a mechanism to remove the burden of approvals and pressure from anti-wind groups at the local planning level and centralize the decision making process. In many communities, this ended up galvanizing local government with wind opponents and, by 2015, 90 of Ontario's 444 municipalities had made formal declarations of council identifying themselves as 'unwilling hosts' to industrial wind turbines (Bues, 2018, p. 41).

At the same time the FIT program created strong financial incentives, attracting large-scale international developers that came with their own financial backing to construct projects. There was little uptake on the program's local investment incentives (Fast, et al., 2016, p. 2) and, due to power contract award conditions that set strict penalties on projects that were not operational on time, developers were under pressure to complete the REA requirements and proceed to construction. This created public concerns about developments being "rubber-stamped" or rushed through approvals by the province and, while many projects were appealed to the provincial Environmental Review Tribunal by opposition groups and some municipalities, very few were rejected (McRobert, Tennent-Riddell, & Walker, 2016).

As a result of growing opposition, and to specifically address municipal pushback of the FIT process under the GEA, the province once again adjusted its renewable energy policy instruments, this time with the introduction of the LRP. Provincial communication to municipalities indicated:

> *"The LRP program has been designed to provide municipalities with a stronger voice and additional opportunities to participate in the development of renewable energy projects. As a competitive procurement program, it is also designed to encourage cost-efficient renewable energy projects to provide value for ratepayers* (Ministry of Energy, 2015, p. 19)."

The LRP evaluation process clearly encouraged initiating community engagement early in the development process. This move, however, was not enough to reverse the anti-wind sentiment that had developed across much of rural Ontario (Stokes L.

C., 2016). The program incentives did not have the desired outcome, as only 40 percent of the selected wind energy projects under LRP were able to obtain local municipal or surrounding landowner support (IESO, 2016; McRobert, Tennent-Riddell, & Walker, 2016).

Ontario also saw other widespread technical issues throughout the green energy implementation process, such as limited access or capacity of the existing electrical grid to receive input from new wind projects (Quick, Law, Christidis, & Paller, 2016; Loudermilk, 2017). In some cases, projects were postponed or had their power contracts delayed until upgrades could be completed by the provincial transmission provider. In later instances, projects considered through the LRP program were prioritized, in part, based on the geographic capacity of the electricity grid (Ministry of Energy, 2015).

Ultimately, after the 2016 cancellation of the FIT II process by the Liberals, before it could be completed, and with many wind energy developments still being constructed in communities as the province was entering a provincial election, the Progressive Conservatives and New Democratic Party both made strong platform stances against the GEA as a strategy for renewable energy implementation (Shreve, 2018). Before his party was defeated in the 2018 election, the Ontario Energy Minister Glenn Thibeault was quoted regarding the green energy procurements, stating: *"How we implemented those policies led to a number of sub-optimal outcomes* (Hill, 2017)*."* Shortly after taking power, the new Progressive Conservative government repealed the GEA and cancelled several uncompleted wind projects across the province.

LITERATURE REVIEW

Distributive Justice and Community Benefits

With the details of Ontario's wind energy policy periods established, we can draw on other academia and theory to determine how community benefit agreements fit into the narrative of wind power project developments. Based on John Rawls' social justice theory, distributive and procedural justice are commonly applied lenses through which to examine how wind energy projects interact and impact the communities where they are installed turbines (Cowell, Bristow, & Munday, 2011; Walker, Wiersma, & Bailey, 2014; Liljenfeldt & Pettersson, 2017; Walker & Baxter, 2017a; Walker & Baxter, 2017b). While procedural justice considers the engagement efforts and tools that developers use to inform and include local communities in the siting and decision making processes, distributive justice concentrates on the dissemination of negative and positive impacts from wind turbine projects. This study only briefly touch on concepts of citizen engagement, trust, and legitimacy and focuses on the 'who gets what' distributive facet of wind energy developments to consider how community benefit agreements between wind energy projects and municipalities were influenced by Ontario policy decisions.

We see distributive justice contextualized in wind energy project discourse through the positive and negative aspects attributed to industrial wind turbine construction. Opponents to these projects frequently draw upon arguments of noise, aesthetic impacts, and potential health effects on nearby residents or land users. In contrast, those in favour of wind projects rely on virtues, such as job creation, landowner income, tax generation, community benefits, and environmental stewardship to

generate support. Financial compensation is a tool frequently relied upon in the development process to account for land-use rights, offset negative externalities, or incentivize local support. The perception of good benefit distribution within the community can be tied to successful project reception and, in contrast, dissatisfaction with distribution may develop if seen to be unfair or inadequate, leading to decreased support (Walker & Baxter, 2017a).

Some mandated financial distribution mechanisms are nearly ubiquitous in western wind developments, such as increased land use taxes and lease arrangements with landowners for wind turbines placed on their property. In Ontario, individual property owners are thought to receive compensation of roughly $8,000 per turbine per year (Walker, Baxter, & Ouellette, 2014; CanWEA, 2008), however, this information is not publically accessible or widely shared in the community due to the confidentiality of the agreements.

Although less consistent in their use, other distributive systems can be found in wind energy relationships with host communities, commonly referred to as 'community benefits'. A plurality exists in both the terminology and application of formal and informal arrangements between host communities and wind energy developments (Kerr, Johnson, & Weir, 2017; Macdonald, Glass, & Creamer, 2017). Job creation and infrastructure improvements may result naturally out of the development itself and are sometimes discussed in this category. However, cooperative ownership, community investment in the project, community benefit agreements, and vibrancy funds are prominently noted forms of community benefits (Munday, Bristow, & Cowell, 2011; DECC, 2014; Macdonald, Glass, & Creamer, 2017). These can occur through

voluntary and/or negotiated interactions between the host community and wind project developer, or be encouraged through specific policy instruments in the development process. A further outline of community benefits is provided in Table 1:

Table 1: Types of Community Benefits (adapted from DECC, 2014, p. 8 and Munday, et al, 2011, p. 3)

Community Benefit Type	Description
Community Benefit Agreements	• Direct financial contributions from a wind developer to the community. • Usually provided via annual monetary payment, but may be lump sum. • Also referred to as Community Benefit Fund or Vibrancy Fund.
In-Kind Benefits	• Other provisions with value to the community by the wind developer. • May include in-kind works, funding of special projects, local energy discounts, local sponsorships, hosting local events, or natural/environmental enhancements.
Community Partnerships	• Where the project is partially or fully owned by the community through investment in the wind project. • Communities typically receive a return on investment, but also take on project risk. • Also referred to as Community Investment, Shared Ownership, or Cooperative Ownership.
Socio-Economic Benefits	• Job creation, direct employment, skills training, and educational or environmental awareness opportunities.
Material Benefits	• Derived from actions taken directly related to the development. • e.g. infrastructure upgrades required to complete the project.

Community benefits are traditionally associated with garnering local backing based on a rational economic model where their provision equates to enhanced support (Cowell, Bristow, & Munday, 2011; Walker & Baxter, 2017a; Walker, Russel, & Kruz, 2017). This is relevant, as most jurisdictions have an approval process for renewable energy projects that requires some form of public acceptance; whether for

broad based policy direction in a centralized system or from a grass-roots resident base with access to local decision makers. However, the rational relationship between community benefits and support is not unconditional. Aitken (2010) found benefit arrangements were considered to be of value amongst community members and groups, but also saw evidence that the same arrangements were seen as attempts to "bribe" the community and that this feeling persisted after construction. This has been noted in the Ontario context where financial benefits to host communities has led to increased support for wind energy projects but is tempered by indications that compensation in the absence of procedural justice may have the opposite effect, resulting in perceptions of bribery or "blood money" (Cowell, Bristow, & Munday, 2011; Walker & Baxter, 2017a).

Therefore, framing and communication are critical to the success or usefulness of benefit arrangements in wind developments. Kerr, Johnson & Weir (2017) point out the UK government's emphasis on terminology such as "community benefit payments," not "compensation;" the latter carrying the implication that a 'wrong' has occurred. Although there is evidence to show the negative context of community "bribes" may be mitigated through institutionalized programs (i.e. regulated by the state) (Walker, Russel, & Kruz, 2017, p. 74), Cowell, Bristow & Munday (2011) found in the UK that there was still a strong desire to allow unencumbered negotiation between the affected community and wind project developers. Mindful of the outward facing duality of community benefit arrangements, Walker, Baxter & Ouellette (2014) suggests that "cautious optimism" should be used when considering their role to garner community support.

In addition, the fairness of benefit distribution is important. The 'right people getting the right amount' from wind developments has been associated with public perceptions of wind developments in host communities. Walker & Baxter (2017a) found more support for participatory models, such as community ownership, when compared to simple financial input. While local and cooperative ownership schemes for wind projects are common in some European jurisdictions, such as Germany, Denmark, and the Netherlands (Toke, Breukers, & Wolsink, 2008), a polarization toward financial contributions to communities was observed in UK wind project implementation (Strachan, Cowell, Ellis, Sherry-Brennan, & Toke, 2015). Ontario's case mirrored the UK environment with few local governments deciding to partner with wind energy developments (Fast & Mabee, 2015; Walker & Baxter, 2017a; Walker & Baxter, 2017b). Indeed, Jami & Walsh (2017) recount the following statement by the Minister of Energy who tabled the GEA as part of their study:

> *"When we were crafting the policy we did not properly anticipate the ease with which developers would attract capital. We rather expected the model, which we saw and liked so much in Denmark where local projects typically had hundreds of local investors, was going to be the model. We expected that developers were going to have to be more community integrated in order to raise local financial capital. I criticize my own efforts and look at the Green Energy Act and say, oh this worked and this didn't, that's one of the things that I think in our construct didn't emerge the way we had expected."*

So, while it is recognized that, in addition to private leases with landowners, financial payments to the community will likely not present an acceptable solution to equitable

benefit distribution (Walker & Baxter, 2017a, p. 764), it remains the most prominent community wide benefit tool considered throughout the implementation of Ontario's green energy programs.

Community Benefit Agreements

Recognizing that there are various applications that can be used to consider distributive justice, in the Ontario case community benefit agreements offer both a wide spread and quantifiable variable to demonstrate local benefit sharing. A more complete definition and review of community benefit agreement application is presented below to structure subsequent hypothesis formulation and analysis.

Where wind project developers agree to make annual or lump sum financial contributions to a host community, this is typically formalized through some form of community benefit agreement that defines the term, amount, any conditions for the money's use, and the governing body for the funds. In Ontario, where agreements exist, they are commonly executed between the project owner and the municipal government. While discussion of the definition of 'community' and appropriate governance of funds is noted in the UK (Bristow, Cowell, & Munday, 2012), Ontario based literature presented no examples of benefit agreements being held outside the local government, who is responsible for allocating the funds.

In Ontario, as in the UK case, offering and negotiating benefit agreements is voluntary on behalf of the developer. Retaining a perception of 'goodwill' is important for developers, as it allows them to direct community narratives away from compensatory language. Approaching benefit agreements through a lens of

Corporate Social Responsibility (CSR) presents an alternative motive to connotations of payoffs for approvals and wrongdoing (Kerr, Johnson, & Weir, 2017).

Large corporate developers frequently hold the balance of power when negotiating with rural community bodies who often have limited resources and exposure to these types of projects (Cowell, Bristow, & Munday, 2011). Jami & Walsh (2017) suggested that municipalities could "use their leverage in extraordinary ways to figure out opportunities to the benefit of the local community (p.22)." However, this "leverage" typically resides in venues of planning approvals and centralized, technocratic shifts in policy direction can act to remove power from municipalities; such was the Ontario case with the elimination of local planning authority for wind projects under the GEA.

Other policy instruments developed in the UK act to create a more equitable 'playing field' between communities and developers, although stop short of mandated direction on community benefits. The *Community Benefits from Onshore Wind Developments: Best Practice Guide for England* overtly encourages municipalities to purse agreements with developers as "a rare opportunity for the local community to access resources, including long-term, reliable and flexible funding to directly enhance their local economy, society and environment (DECC, 2014, p. 9)." In addition, the English Register of Community Benefits and Engagement is a voluntary initiative established to document and publically communicate benefit arrangements in England and Scotland (Kerr, Johnson, & Weir, 2017). These initiatives provide a level of transparency and accessibility to both the negotiating parties and community members that do not currently exist in the Ontario system.

THEORY AND HYPOTHESES

Provincial leadership in Ontario developed deliberate policy environments to establish wind power production as part of its renewable energy strategy. This goal was achieved through the installation of over 2,500 wind turbines across mostly rural communities with varying levels of acceptance or resistance. Although they were not mandated as a policy instrument by the province, community benefit agreements played a significant role in Ontario wind energy implementation (Walker & Baxter, 2017a). Commonly seen as a mechanism to demonstrate goodwill and garner support for wind turbine projects, which can be advantageous for developers who want move smoothly through the REA process, benefit agreements also present a reciprocal opportunity for municipalities to access long-term fiscal resources from wind projects. The municipal government, then, becomes an agent of benefit distribution to local residents, so it is important that we understand what factors lead to benefit agreement outcomes.

Community benefit agreements have been a specific area of focus for both academia and government policy makers in England, Scotland, and Wales as an integral part of wind project implementation. Although project case study comparisons comprised of a limited number of wind projects have been considered in the Ontario context, an analysis of benefit agreements has not been carried out on a province-wide basis. Walker & Baxter (2014) suggest that similar transparent practices, such as community benefit registries in the UK, would better inform provincial and municipal decision making relating to wind energy developments. This is supported by indications that public and municipal reaction to the wind projects influenced

provincial policy development and, where community benefit agreements are considered to play a role in local acceptance (as they are viewed in the UK), they have the potential to play a more obvert role in achieving wind energy goals. Viewing wind energy development through a distributive justice lens, this paper considers the following research question:

> How did Ontario wind energy policy design influence community benefit agreement outcomes for host municipalities?

In addition to addressing this question, a secondary benefit of this research is that it documents the benefits formalized between wind developers and municipalities in Ontario. As far as the literature review has indicated, no other consolidated source of record for Ontario municipal benefit agreements exists and only one other research paper was found to publish any actual community benefit agreement values for the Ontario context (Fast & Mabee, 2015, p. 32).

Given that there are distinct characteristics observed within the stages of Ontario's policy environment for wind energy projects and that some stages provide more incentive for developers to enter into negotiated benefit agreements with local municipalities than others, the following general hypothesis guides this analysis:

> H: Ontario policy structures for wind energy projects that encourage and incentivize local municipal support result in more frequent and higher benefit agreements for municipalities.

A summary of the primary Ontario programs for wind energy development, as outlined in the previous sections, is provided in Table 2. In it, we can identify several variables that are expected to influence community benefit agreement use. The fixed power rates provided under the FIT period are greater than the resultant competitive pricing under the RES and LRP periods. We note that the RES period was the only era to operate with local planning authority intact, before provincial REA's were introduced under the GEA. Lastly, while no specific incentives were built into the RES acquisition process, the FIT period offered additional financial incentives for wind projects that found community investors and projects that could demonstrate community support under the LRP system were advantaged in the scoring and award process for power contracts.

Beyond the noted factors in Table 2, there are two additional variables that are considered relevant to community benefit agreement outcomes. First, a visible increase in public and municipal opposition toward wind energy projects was noted throughout the timeline of their implementation. Second, wind projects in Ontario were virtually nonexistent prior to initiation of the RES program. This created an environment of increasing understanding of wind energy projects over time as municipalities developed expectations when dealing with developers.

The above identified factors can be applied to the overall research question and hypothesis. To explore this, five direct sub-hypotheses based on these variables are stated and justified in greater detail below. A summary of the sub-hypotheses and their expected influence on municipal benefit outcomes is provided in Table 3 at the end of this section.

Table 2: Wind Energy Project Power Contract Pricing

Program	Effective Date	Contract Price (¢/kWh)	Characteristics
RES	2004 - 2007	8 - 8.6	• Pre GEA - Local planning authority. • Competitive pricing. • Unconstrained power contract offer.
FIT	2009 - 2011	13.5* - 16**	• GEA applicable - Provincial approval process. • Fixed pricing. • Financial price incentives for equity ownership by Indigenous and community proponents.
LRP	2016	8.6	• GEA applicable - Provincial approval process. • Competitive pricing. • Proposal scoring incentive for projects with landowner/leaseholder support, community support, project community agreement, and Indigenous participation.

(Holburn, Lui, & Morand, 2010; Loudermilk, 2017; Ontario Power Authority, 2010; IESO, 2019)
Notes: RES includes RES I, II & III average awarded contract price.
FIT includes FIT 1 and GEIA contracts (*Base price; **Price with incentives).
LRP average awarded contract price.

Financial Input into Ontario's Green Energy Sector

The first element to consider is money. The financial compensation for power production is likely to have a direct impact on available funds within a development project to share with host municipalities. Indeed, Toke, et al. (2008) notes implementation issues in the UK neo-liberal 'market based' systems that saw developers underbid competitors to the extent of making projects economically unviable. Where tight profit margins or instability exist, there would be little room for community contributions, unless mandated. Based on a rational economic calculation, when the price of energy that can be earned is higher, and all other variables are considered equal, developers will be more inclined to

voluntarily engage in benefit agreements with the host municipality to garner project support.[2]

Ontario saw distinct financial policy instruments applied to its three primary wind energy programs. Under the RES period, power contract pricing for wind projects was determined through competitive auction. The FIT system used fixed electrical contract offer rates for successful projects and, beyond that, made additional financial commitments to projects that partnered with municipalities or First Nation communities. Policy shift under the LRP period saw a return to the competitive project pricing model, rather than the previously pre-set offers, but administered contract awards through a RFP process. It should be noted that, although the LRP program's power contract award criteria gave preference to projects that had community support, no additional financial incentives were offered.

H_1: More frequent and higher benefit agreements for municipalities will occur under Ontario policy structures with higher power contract prices for wind energy projects.

Structure of the Application and Approval Process

A second element to consider is the process of being awarded contracts for power generation. Implementation of the GEA was the most prominent change to

[2] It should be noted that power purchase agreement rates are just one component to wind project economic viability. Other influential factors are also present, such as variable costs for electrical grid hook-up, available potential wind energy, and environmental accommodations. While it is recognized that these additional factors play a financial role in wind energy development, they are beyond the scope of this study.

Ontario's process for wind energy projects. By removing planning authority from the jurisdiction of local governments, the province consolidated power between itself and wind developers. In the RES system (pre-GEA), developers needed to gain acceptance of local decision makers or risk extended appeal processes and uncertain outcomes through an adjudicated tribunal via the Ontario Municipal Board. The FIT and LRP systems (post-GEA) removed local decision making, replacing it with streamlined provincial approvals. Based on the conventional framing of community benefits as a "device for fostering social acceptability" (Cowell, Bristow, & Munday, 2011, p. 540) there is an expectation of higher and more frequent use of benefit agreements in the pre-GEA era, where reliance on local cooperation is more crucial, than in post-GEA regimes. This is additionally supported by Ontario research that indicates allowing agreement negotiations to take place in a local planning environment will result in better financial outcomes for municipalities (Fast & Mabee, 2015).

H_2: More frequent and higher benefit agreements for municipalities will occur under Ontario policy structures where projects require local planning approvals.

However, post-GEA processes for wind developments were not devoid of local consideration. The FIT process provided financial incentive for local municipal or Indigenous ownership and project approvals under the LRP included weighted proposal scores for projects with documented local support. Although the former applied only to direct community investment, in the latter process we, again, expect to see developers employ benefit agreements to secure favour of locals

for a better chance of provincial approval and potentially to offset higher electrical rates in the proposals.

H_3: More frequent and higher benefit agreements for municipalities will occur under Ontario policy structures that incentivize local community and government support.

These two hypotheses compete with each other in the Ontario case where, as the province removed the local approval authority related to H_2 through legislation, it later tried to reinstate local involvement through the acquisition process related to H_3.

Actor Influence

As noted previously, community benefits are often seen as a way of gathering support for projects. Therefore, other actors outside the formal arrangements of wind energy projects could potentially influence the willingness of developer and municipalities to enter into benefit agreements. Opposition to wind turbine projects increased throughout the provincial policy timeline, both by the organization of local public resistance groups and by municipalities, through formal council statements against wind developments (Stokes L. C., 2016; Bues, 2018). Fast & Mabee (2015) additionally noted a general increase in anti-wind media coverage through the FIT period. The province was observed to react to mounting visible opposition from the public and municipalities, first by the Premiere's statements justifying creation of the GEA to combat 'NIMBY' sentiments and later by designing the LRP acquisition process to address

municipal cooperation. A reasonable action by developers is to look to community benefit agreements as an opportunity to enhance corporate image and garner local project support when presented with opposition from that sector. The expectation for Ontario's case, then, is to see an increase in frequency at each stage of green energy implementation as opposition likewise increased.

H_4: More frequent and higher benefit agreements for municipalities will occur under Ontario policy structures with higher levels of public and municipal opposition.

Finally, we should consider how the normative behaviour of actors associated with community benefit agreements changes over time. In Wales, Bristow et al. (2012) found an increasing expectation of benefit arrangements by both developers and communities and they were observed to be more frequently used and the typical value increased over time. One explanation for this trend was that application of benefit agreements was established as "shadow contracts" between the actors prior to any formal arrangements being discussed (Kerr, Johnson, & Weir, 2017). As the practice became more common, a preconceived expectation developed amongst the parties that some form of benefits will be provided to the host municipality. In some policy regions, this expectation has become more formal, such as the Scottish Government's 'Good Practice Principles' recommendation of £5,000 per MW per year (Macdonald, Glass, & Creamer, 2017, p. 178). Although no formal policy has been implemented in Ontario, it is reasonable to consider that growing familiarity with the use and

application of benefit agreements would increase their likelihood of expectation and application over time.

H_5: More frequent and higher benefit agreements for municipalities will occur over time as actors become more familiar with the application of benefit agreements.

Table 3: Projected Municipal Benefit Impacts from Policy Characteristics

Policy Environment	Characteristic	Primary Factor	Benefit Influence
RES	Competitive OPA Contract Rate (Auction)	Financial	↓
	Local Planning Approvals Required	Structural	↑
	No Contract Incentives for Local Support	Structural	↓
	Low Opposition	Actor	↓
	Low Local Familiarity	Actor	↓
FIT	Higher Fixed OPA Contract Rate	Financial	↑
	Local Planning Approvals Removed	Structural	↓
	OPA Contract Rate Incentives for Local Partnerships	Financial / Structural	N/A*
	Increasing Opposition	Actor	↑
	Increasing Local Familiarity	Actor	↑
LRP	Competitive OPA Contract Rate (Proposal)	Financial	↓
	Local Planning Approvals Removed	Structural	↓
	OPA Contract Award Incentives for Local Support	Structural / Financial	↑
	High Opposition	Actor	↑
	High Local Familiarity	Actor	↑

***Applies to community partnership rather than community benefit agreements.**

METHODOLOGY

Research Design

This project uses a comparative analytical approach to consider characteristics of community benefit agreements for Ontario wind energy projects developed across a longitudinal timeline. The timeline is segmented into three distinct policy periods of green energy implementation: RES, FIT, and LRP. The overall timeline is bounded by the introduction of specific green energy programming in 2004 and the end of the provincial direction for green energy projects in 2018.

An analytical assessment of the collected quantitative data was used for comparison, as opposed to statistical methods. This decision for this approach was taken because there are numerous socioeconomic and environmental factors that would need to be considered in order to conduct a robust statistical analysis between communities (Fast & Mabee, 2015; Liljenfeldt & Pettersson, 2017; Quick, Law, Christidis, & Paller, 2016; Stokes L. C., 2016; Walker, Baxter, & Ouellette, 2014). The analytical style used in this report reflects similar methods of review from other studies on community benefits (Bristow, Cowell, & Munday, 2012; Cowell, Bristow, & Munday, 2011; Munday, Bristow, & Cowell, 2011; Toke, Breukers, & Wolsink, 2008).

Data

The data for this research were obtained through a number of secondary sources and an original dataset created from documentation received from selected lower- and single-tier municipalities. The data selection criteria and collection process for this research are outlined in detail below.

Wind Energy Project Data

Christidis (2013) identifies the difficulties in collecting and verifying data relating to wind turbine projects in Ontario and this issue is additionally noted by at least one other researcher (Stokes L. C., 2016). No unified repository of Ontario wind energy or renewable energy projects currently exists. Project details and siting information, including individual wind tower locations, are largely unconsolidated. This data was sourced from multiple venues, some of which included limited detail or were of uncertain reliability and required further corroboration through cross-referencing with more formal sources.

Renewable wind energy project information was initially collected and assembled from the following resources:

- MOEE Renewable Energy Project Listings
- IESO websites for Feed-in Tariff Program, Energy Procurement Programs and Contracts, and Wind Power in Ontario mapping
- Ivey Business School Policy Brief (Loudermilk, 2017)
- Individual wind project and municipal websites

The initial dataset identified 75 individual Ontario wind projects ranging from 2.35 to 300 MW. This cohort was refined by limiting the research pool to only those projects equal to or greater than 40 MW in nameplate capacity[3] located in the Ontario Ministry

[3] The nameplate capacity represents the total approved electrical generating capacity for the wind energy project.

of Environment, Conservation and Parks Southwest, West Central, and Eastern Regions. The basis for this decision were as follows:

1) A 40 MW wind energy project typically consists of 10 to 20 industrial wind turbine sites. Projects of this size and greater present a significant community impact to warrant and influence benefit agreements.
2) Projects in Northern Ontario were excluded due to unique challenges relating to costs associated with that region, such as access to labour markets and distance from manufacturers.
3) Although the 40 MW threshold resulted in eliminating projects from the dataset, the study still considered the majority of identified wind energy projects constituting approximately 80 percent of Ontario's wind power generating capacity (CanWEA, 2019; IESO, 2019).

These changes led to a revised database of 41 wind energy projects that included the project name, number of turbines, name plate capacity of the project in MW, the project proponent and/or the current project owner's name, the REA status and REA approval date (where available), the OPA or IESO contract date, and a municipality identifying the geographic location of the project.

Municipal Host Identification

This study chose to concentrate on municipal benefits of single- and lower-tier governments in Ontario. These levels of government were responsible for land use planning approvals of renewable energy projects before that role was centralized at the provincial level. Therefore, considering single- and lower-tier municipalities

allows for a comparison of approval environments between pre- and post-GEA implementation.

However, wind project and provincial records in the above dataset were found to be inconsistent when identifying the municipal locations of wind turbine developments. Lower-tier host municipalities were frequently not referenced in the source documents and single- and upper-tier municipalities were found to be the most commonly named geographic project location. In addition, it is not uncommon for wind projects to span across municipal boundaries and no provincial records were found that quantified the number of turbines or name plate capacity when multiple municipalities were identified as host.

Because of these ambiguities, additional research was undertaken to identify and confirm host municipalities and their respective wind energy project details for each of the projects in the previously noted dataset. Again, due to the lack of a centralized source, it was necessary to outline the geographic impact of the wind energy projects using an on-line source, Ontario Wind Turbines mapping (Ontario Wind Turbines, 2015), a no longer functional website that was linked from a wind turbine opposition group (Ontario Wind Resistance). This data was then verified using publically available project mapping and geospatially compared using Google Earth Pro and municipal boundary shapefiles, obtained through the Ontario Data Catalogue (MMAH, 2015). The individual number of turbines, capacity, and, in some cases, omitted municipalities, were added to the database on a project by project basis.

Municipal Benefit Agreement Data

To obtain benefit data, agreements between municipalities and identified wind project developers were requested from the Clerk (or directed office) in individual municipalities. Where necessary, a formal Freedom of Information request was placed through process of the *Municipal Freedom of Information and Protection of Privacy Act*, *1990* to obtain the requested documentation. In addition, agreement documentation was supplemented with information gathered from municipal web pages, council agendas and archives of meeting minutes.

An assessment was undertaken of each agreement or associated municipal account of negotiations to classify and valuate benefits received from wind energy proponents. Collected data concentrated on financial flows to the municipality, such as community vibrancy funds, that were not tied to compensation, damages, or other identified direct impacts. These secondary receipts were also noted, but kept separate from the unencumbered benefits. Where multiple factors were contained within a single agreement, the 'non-benefit' classification and values were parsed into separate categories, but not included in the analysis.

Both the total annual value of the provided benefit as well as the dollar amounts per MW of installed power capacity were calculated for the dataset. The latter of these normalizes the data to better compare different project sizes and involvement across municipalities and has been used as a basis for policy targets (Macdonald, Glass, & Creamer, 2017) and in other community benefit agreements studies considering

large numbers of wind energy projects (Bristow, Cowell, & Munday, 2012; Cowell, Bristow, & Munday, 2011; Munday, Bristow, & Cowell, 2011).

The term of the agreements were noted, where available and generally correspond with the associated IESO power purchase agreements with wind projects. Nearly all were confirmed to be for a period of 20 years. At least one municipal contribution was received as a lump sum payment. This dollar figure was distributed equally across the life of the agreement to achieve a per annum value and normalized as above for comparison purposes.

Many of the municipal agreements specifically outlined the number and capacity of wind turbines planned for construction within their boundary. This information was also used to further verify the impacts of the wind energy projects noted through previous data acquisition methods. Where there was a discrepancy between the two datasets, the values in the agreements were used, unless significant documentation existed to suggest that these values were altered in the final project construction.

Limitations and Assumptions

There are several limitations to note in regard to how this study was structured. The first is a risk of the data being incomplete. The previously indicated unconsolidated nature of the source data, discrepancies in information between datasets (e.g. project names, owners, host municipalities, etc.), and limited post construction documentation (e.g. turbine numbers and locations) creates reliability concerns. In addition, it is possible that all municipal agreements were not obtained due to unavailability of municipal records. Wherever possible, data was crosschecked

against multiple sources and where deviations were found, judgment was used to determine which was most reliable.

Another limitation may result from restricting the research pool to only those projects equal to or greater than 40 MW in size, excluding smaller industrial wind turbine projects. There may be aspects associated with smaller developments that are not captured in the data presented in this study. Other studies have observed heterogeneous public reactions to wind developments based on the size and configuration of projects, resultant in greater community acceptance of smaller, dispersed projects (Walker, Baxter, & Ouellette, 2014; Bues, 2018). This dichotomy may impact the use of benefit agreements if opposition within communities is similarly influenced, but was not considered further in this study.

Although all projects within the RES policy period exceeded the 40 MW threshold, smaller projects awarded in the FIT and LRP policy periods were precluded from the study. In addition, all wind projects initiated under the RESOP fell below the size limit set above.[4] This resulted in the RESOP not being considered as one of the policy periods examined as part of this study.

The last limitation relates to differences in wind potential across the province. Wind potential is a determinant of profitability wind energy projects. More profitable developments may be more willing to share revenues through benefit agreements with municipalities to garner local support. Quantifying wind potential based on

[4] It is estimated that 35 projects representing approximately 350 MW in total were constructed as part of the RESOP (Loudermilk, 2017) (Yatchew & Baziliauskas, 2011).

geographic location of developments and examining the relationship to project profitability was beyond the scope of this study and not included in the analysis.

In addition to the above limitations, several assumptions were required when assembling the final dataset. Four wind projects that received power purchase agreements from IESO and had either completed or were in the process of completing REA's were subsequently cancelled following the 2018 Provincial election. The details of these projects and the application of their data are as follows:

1. Nation Rise Wind Farm

    Policy Period: LRP

    Cancelled: December 2019

    Municipality: Township of North Stormont.

    Data Use: Community benefit agreement was executed prior to cancellation; data retained in study.

2. Strong Breeze Wind Project

    Policy Period: LRP

    Cancelled: July 2018

    Municipality: Municipality of Dutton Dunwich

    Data Use: Draft community benefit agreement was negotiated but remained unexecuted following the project cancellation; data retained in study.

3. Otter Creek Wind Farm

    Policy Period: LRP

    Cancelled: July 2018

    Municipality: Municipality of Chatham-Kent.

    Data Use: Agreements not obtained; not included in study.

4. White Pine Wind Farm

    Policy Period: FIT

    Cancelled: July 2018

    Municipality: Prince Edward County

    Data Use: Agreements not obtained; not included in study.

Although it is possible that if the draft agreement obtained from the Municipality of Dutton Dunwich had proceeded, it may have undergone revisions before it was executed, the state of documentation and values included in the agreement suggest that it was sufficiently complete to warrant inclusion in this study.

RESULTS AND FINDINGS

This study identified 27 lower- and single-tier municipalities that are host to 41 wind projects equal to or greater than 40 MW in size, regardless of total capacity located in the individual municipality. 24 of those municipalities were either able to provide some form of municipal agreement(s) or confirm that no agreement was entered into with the identified wind energy developer. Two municipalities did not respond and two municipalities were only able to confirm agreements for a portion of projects in their respective communities. The Municipality of Chatham-Kent was also isolated from the study data due to the preliminary status of the data sources and the unique arrangements made with wind developments, as further discussed below. A map of the municipalities identified as part of this study is presented as Figure 2.

After eliminating municipalities with unconfirmed data and accounting for projects that were sited across municipal boundaries, this study analyzed a total of 39 relationships between municipalities and wind farm developments. This included instances where a benefit agreement exists between a municipality and developer and when no agreement was present. Where agreements were present, they were reviewed to quantify the value and nature of the agreements. The considered dataset is presented in Appendix A and a summary of the findings is provided in Table 4 below.

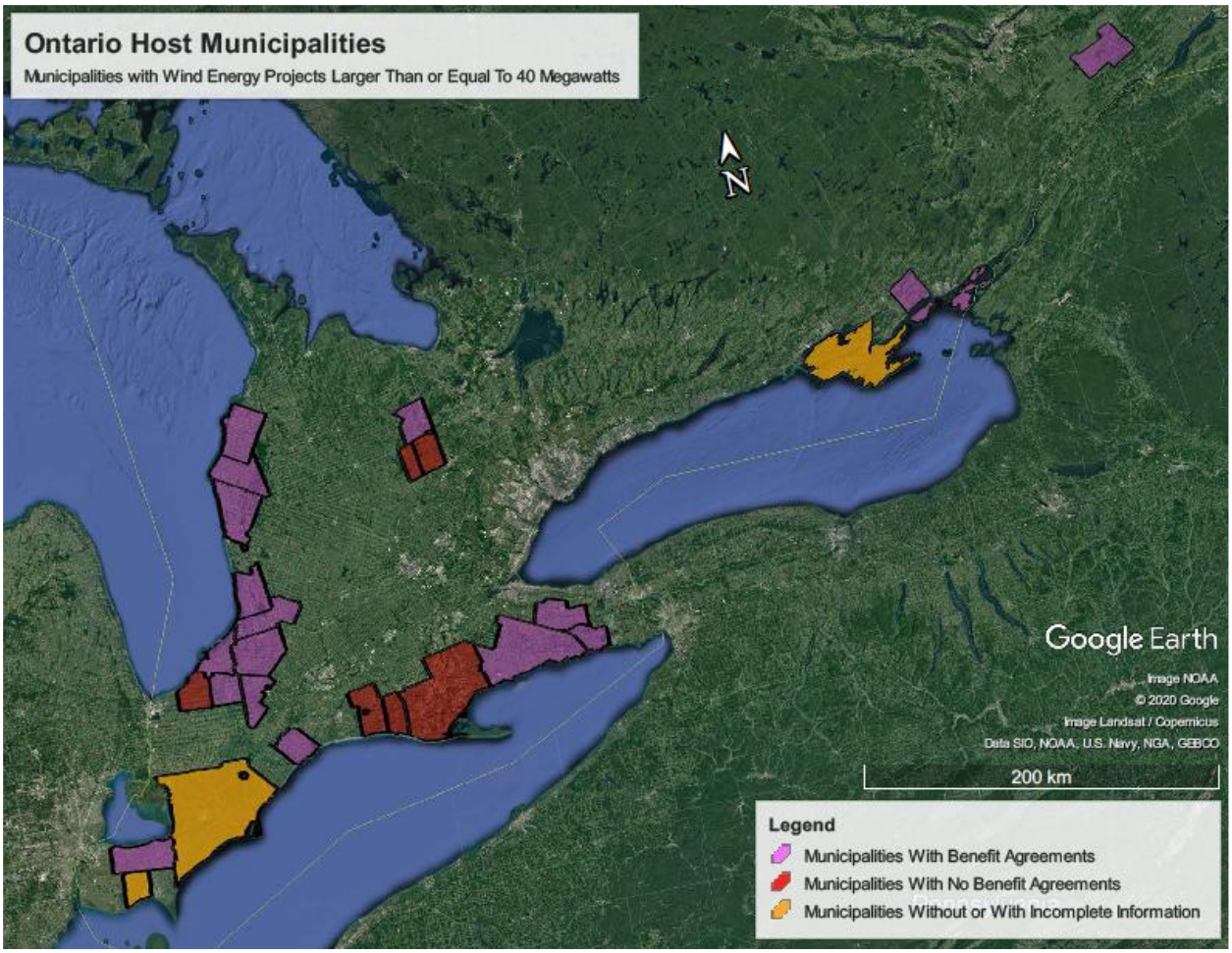

Figure 2: Community benefit agreement status of Ontario municipalities with wind energy projects equal to or larger than 40 MW identified as part of this study. Google Earth Pro V 7.3.2.5776 (March 5, 2019). Ontario, Canada. 43°52'57.81"N, 79°47'20.13"W, elev 275m, eye alt 982.32 km. SIO, NOAA, U.S. Navy, NGA, GEBCO [January 29, 2020].

Table 4: Community Benefit Agreement Outcomes in Ontario (adapted from Cowell, et al. (2011); Munday, et al. (2011); Bristow, et al. (2012))

Benefit Characteristic	RES 2004-2007 (n=8)	FIT 2009-2011 (n=28)	LRP 2016 (n=3)
Community benefit agreements (provision of money by developer)			
Number of benefit agreements	4	20	3
Average agreement payment ($/MW/year)	$1,673	$3,243	$3,389
Agreement payment range ($/MW/year)	$99 - $3,261	$192 - $7,000	$3,000 - $4,167
Projects hosted without municipal benefit agreements in place	4	8	0

In total 27 community benefit agreements were enacted between Ontario municipalities and wind developments; 12 instances were confirmed where hosted projects had no benefit agreement in place with municipalities. In general, a rise in the use and value of benefit agreements is observed across the timeline of this study. Figure 3 shows that, on a percent basis, benefit agreements were used more frequently in the latter policy periods, with 50 percent implementation during the RES period, increasing to 100 percent use for projects initiated as part of the LRP period.

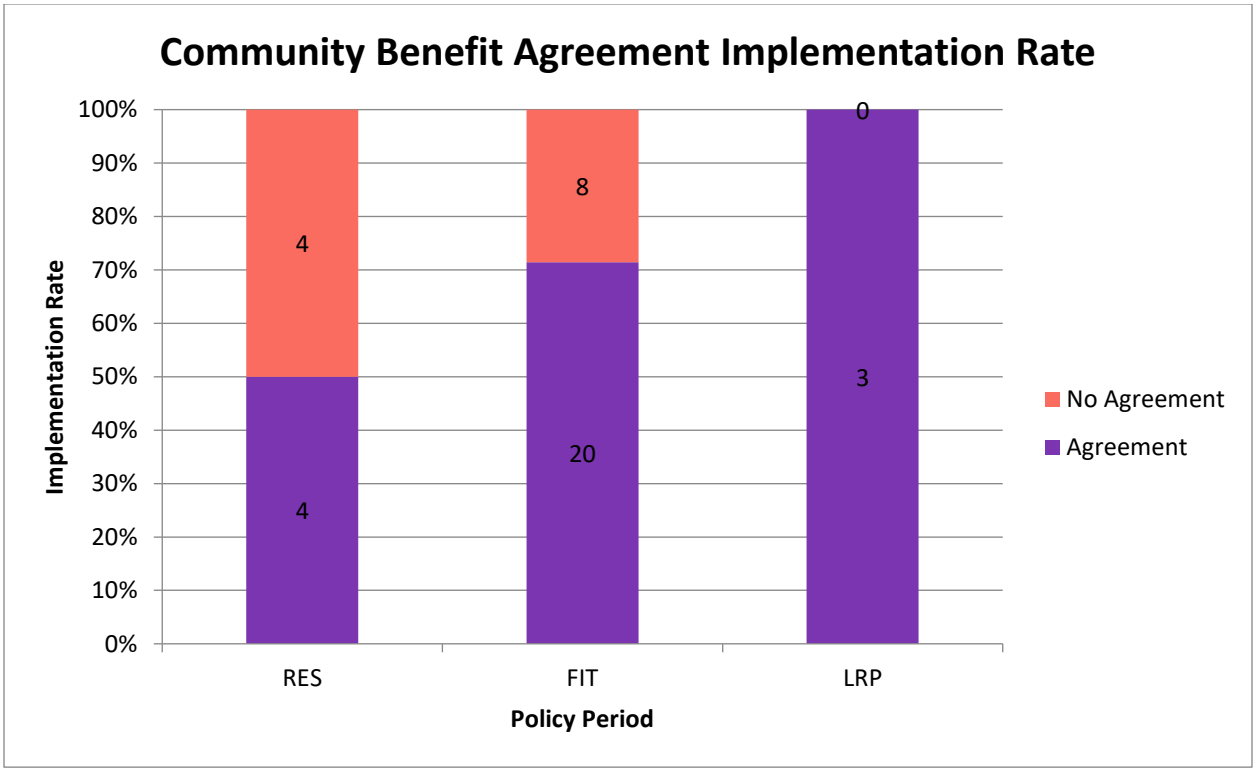

Figure 3: Use of municipal benefit agreements by policy period. RES: n=8; FIT: n=28; LRP: n=3.

The average value of benefits agreements also rose across the three periods (see Figure 4). There was a notable rise from the RES to FIT periods and a smaller increase from the FIT to LRP periods. The variation in observed agreement values can be shown more specifically by calculating the mean and standard deviation (s.d.)

for each policy period: RES (n=4) mean = $1,673 with s.d. = $1,527; FIT (n=20) mean = $3,243 with s.d. = $1,350; LRP (n=3) mean = $3,389 with s.d. = $674. These calculations show that benefit values became more similar as the province moved from one policy period to the next. However, the distribution of benefit values shown in the Figure 4 box plot identifies several additional considerations. Four outliers (two high and two low) were noted in the FIT period, impacting the standard deviation for the dataset. When those four outliers are accounted for, the range of benefit values in the FIT period appear more concentrated than the LRP period.

Two of the periods were also observed to contain repeated data values for different developer-municipal relationships. 12 of the 20 cases in the FIT dataset were valued at $3,500 and 2 of the 3 cases in the LRP dataset were valued at $3,000. This would be unexpected if all agreements in each period were negotiated independently, but not if there was a tendency by municipalities and developers to use a common price per MW on which to base community benefit agreement values. It should also be noted that the limited data points for benefit values in the RES (four) and LRP (three) periods make it difficult to draw strong conclusions based on the datasets.

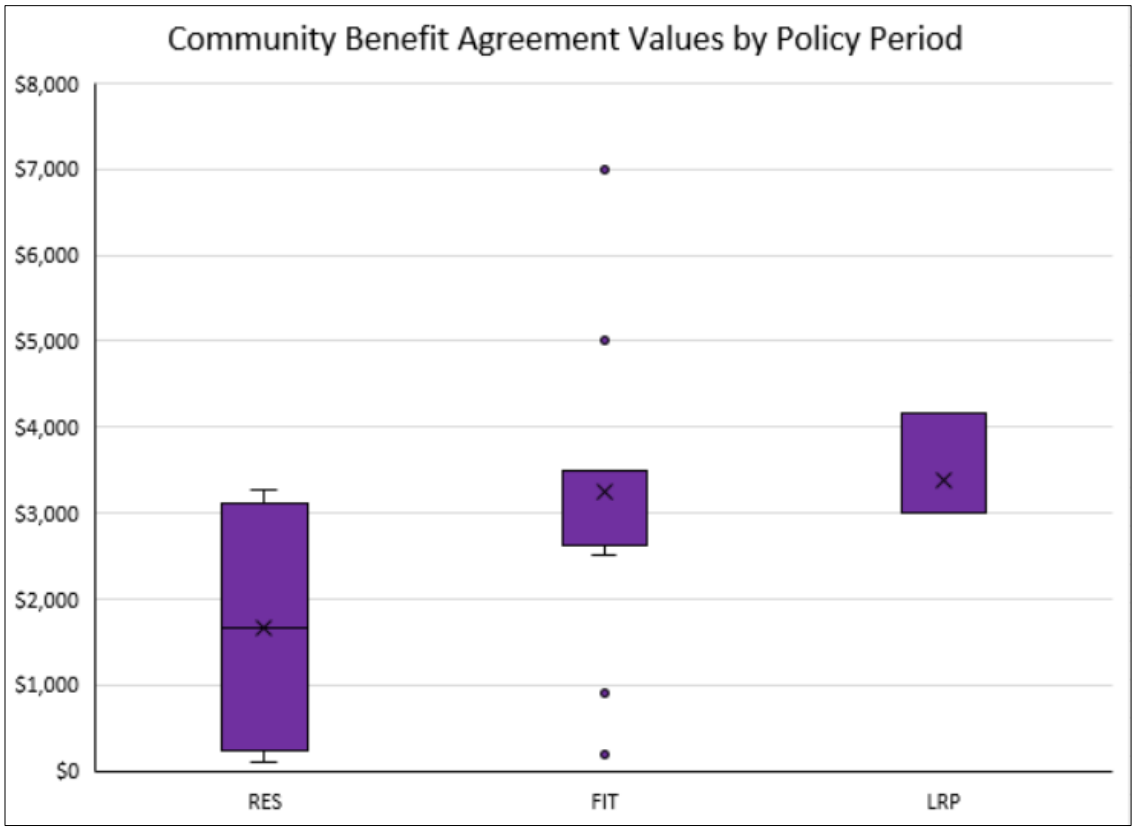

Figure 4: Municipal benefit agreement values under each policy period. 'x' denotes mean value for each policy period, as indicated by 'Average agreement payment' in Table 4. Median values: RES = $1,674; FIT = $3,500; RES = $3,000. Box limits represent lower quartile (Q_1) and upper quartile (Q_3) of each period. Whisker lines represent period maximum (max) and minimum (min) ranges, excluding outliers. Notes: for FIT period, the median = Q_3 = max = $3,500; for LRP period, median = Q_1 = min = $3,000 and Q_3 = max = $4,167.

We can now relate this data to the original research question. The observed metrics of implementation rate and average value of municipal host benefit agreements can be used to determine where policy characteristics associated with each of the Ontario wind energy policy periods impacted benefit agreements for municipalities. Expected outcomes of each of the policy periods based on the previously stated sub-hypotheses are summarized in Table 5 and discussed further below.

Table 5: Expected Policy Characteristic Impacts on Benefit Agreements

Sub-Hypotheses	Characteristic	Primary Factor	RES to FIT	FIT to LRP	RES to LRP
H_1	Power Contract Rates	Financial	↑	↓	-
H_2	Local Planning Approvals	Structural	↓	-	↓
H_3	Incentives for Local Support	Structural	-	↑	↑
H_4	Opposition Intensity	Actor	↑	↑	↑
H_5	Municipal Familiarity	Actor	↑	↑	↑

Financial

H_1 predicted a positive relationship between electrical generation rates offered to wind developments and municipal benefit agreement metrics. Figure 5 shows the municipal benefit agreement values plotted against the date of the provincial power purchase agreement for the wind energy development, grouped into the three policy periods. Recalling Table 2, Ontario power contract prices for wind energy projects were highest under the FIT (13.5 - 16 ¢/kWh) process and lowest (and relatively equal) within the RES (8 - 8.6 ¢/kWh) and LRP (8.6 ¢/kWh) periods.

An increase of benefit values and use were observed during the transition from the RES to FIT programs corresponding with the increase in power purchase rates, as would be expected by H_1. However, even though electrical rates decreased from the FIT to LRP periods, municipal benefit agreement metrics continued to increase, although marginally.

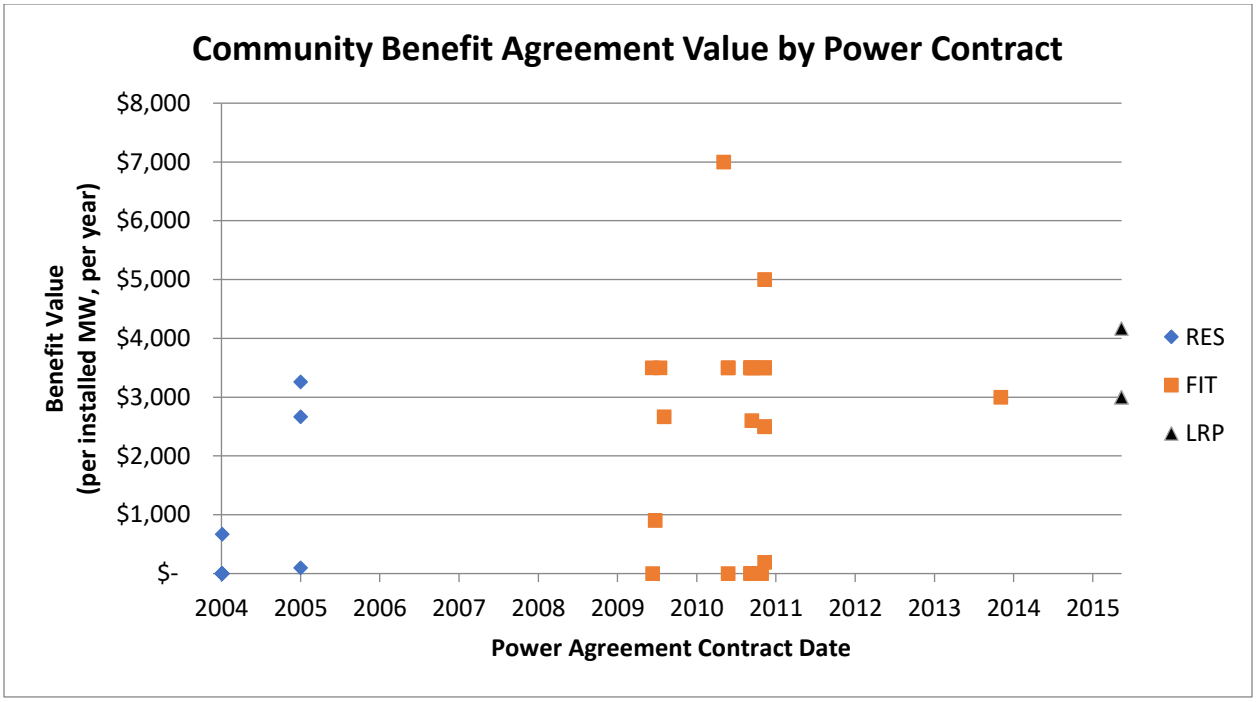

Figure 5: Municipal benefit agreement values for each policy period plotted by date that the hosted wind energy project received its provincial power purchase agreement (n=39). Zero dollar value was used where no municipal benefit agreements was identified.

Based on the open market, competitive bidding structure that the province used for the RES and LRP programs, these two periods were expected to be the most disadvantaged eras to provide financial capacity for community benefit agreements. Examples of underbidding competitors were noted in other regional acquisition processes (Toke, Breukers, & Wolsink, 2008, p. 1138). However, even with similar electrical price incentives, the RES and LRP period differed in application of community benefit agreements, with the RES demonstrating the lowest metrics and LRP period the highest, indicating that financial incentives for wind projects may not be a strong influence on when and how much developers make available for host communities.

Structural

H_2 indicated that the requirement for local planning approvals would produce higher municipal benefit metrics than approval systems that are centralized at upper levels of government. This was based on the expectation that benefit agreements would be used to garner support from local approval authorities, who would view the relationship as a positive community financial resource. The RES was the only program that existed prior to the GEA, when local approvals for wind energy projects were still intact. If the tendency to have benefit agreements is tied to local municipal requirements, they should be seen more prevalently in this initial stage, as opposed to the latter FIT and LRP periods under the GEA's centralized approval process. However, this was not observed in practice, as the RES program saw the lowest use and value for benefit agreements. In addition, while the FIT and LRP were equal, based on their lack of local planning application requirements, an increase in the benefit agreement metrics was seen from the FIT to LRP periods.

The LRP application process contained specific incentives that encouraged developers to obtain local support prior to submitting proposals to the province. Projects that satisfied this requirement received bonus marks toward successful award of an electrical generating contract with the IESO. This was not seen in the RES and FIT policies.[5] H_3 predicted that policies that include provisions for community support would result in better benefit opportunities for municipalities.

[5] Although the FIT program incentivized project partnerships through increased power contract rates, local support was not evaluated as part of the procurement process.

The highest benefit agreement indicators were found in the LRP stage, when compared to the two earlier programs, meeting expectations of the H_3 sub-hypothesis. However, this does not explain the increase in metrics from the RES to FIT phases, where we would expect no change in benefit use and value since the program incentives remained static across these two periods.

Actor

H_4 relied on the traditionally-held position that developers will use community benefits to garner local support in the face of strong opposition. Ontario saw increasing opposition to wind energy projects throughout the policy periods, both publically (Stokes L. C., 2016) and municipally through the occurrence of an increasing number of 'unwilling host' declarations. The posited relationship to the actors' position was observed through an increase in the benefit agreement indicators through all three policy periods.

The anticipated outcome under H_5 was that municipalities would come to expect the use of benefit agreements by developers as these relationships became more common and that this expectation would grow stronger over time. This was observed in Wales (Munday, Bristow, & Cowell, 2011) and supports the notion of an established "shadow contract" between municipalities and developers, as identified by Kerr, et al. (2017). Although variable, benefit agreement metrics showed a general increased over time from the RES to FIT and from the FIT to LRP periods, satisfying the concept of H_5.

The relationships of H_4 and H_5 are tied to the environments and events at the time that municipal-developer negotiations took place. A plot of benefit value according to the date of community benefit agreement, as executed by the municipality, can be found in Figure 6.

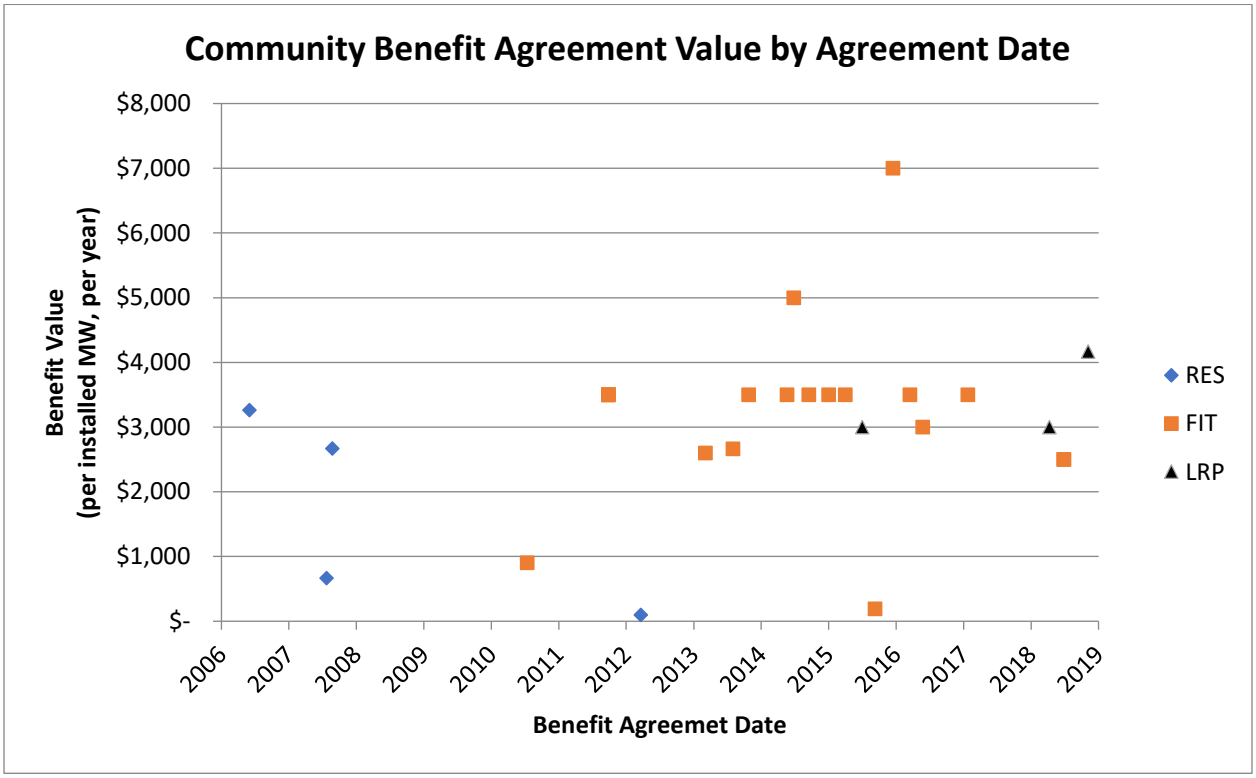

Figure 6: Municipal benefit agreement values plotted by benefit agreement date (n=27). Projects-municipal relationships without benefit agreements (i.e. zero values) were excluded as no date can be attributed.

Other Observations

Beyond the overall measure of benefit agreements with respect to policy environments, we can take away several additional observations from the collected data.

Annual municipal benefit agreement contribution values are provided in Figure 7 broken out by municipality and by policy era. Individual municipalities are shown to receive between zero and $1,554,000 annually from wind power projects, as

identified in this study. Collectively, this accounts for over $7 million per year in municipal revenues across Ontario. Not surprisingly, projects implemented under the FIT policy period contribute the largest cumulative dollar value to municipalities, as it had nearly three times the number of agreements as the other two periods combined.

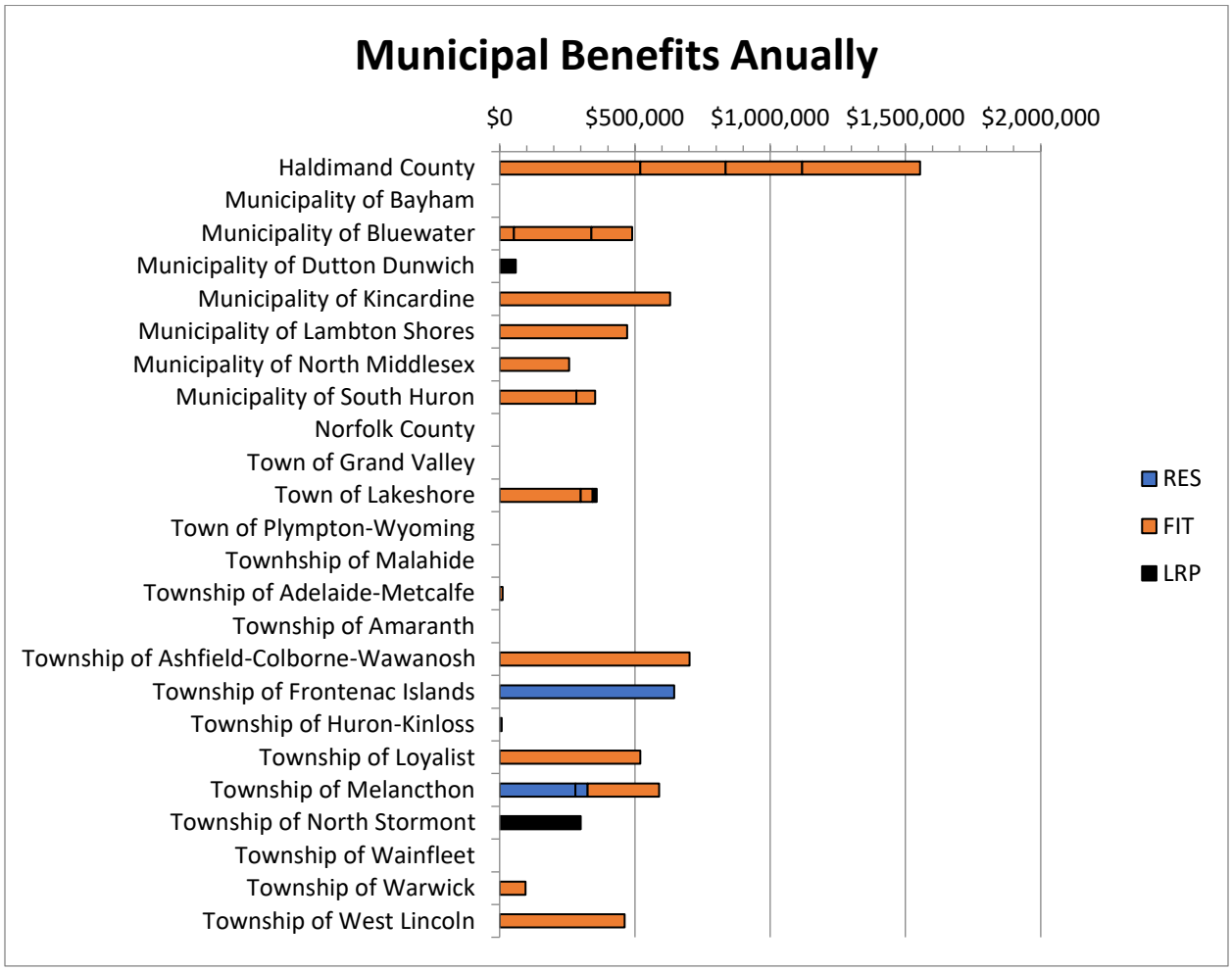

Figure 7: Annual benefit agreement contributions to individual municipalities. Note that projects associated with the Municipality of Dutton Dunwich and the Township of North Stormont were subsequently cancelled.

All but three municipalities were found to have some form of additional agreement with wind developers, either beyond or instead of community benefit agreements. These generally provided compensation for municipal services, infrastructure use, and consulting or legal review fees on behalf of the municipality. Several forms of

these agreements were noted: Road Use Agreements for installation of buried utility lines and impacts related to public road allowances; Transmission and Collection Line Agreements compensating for the placement of overhead power lines along public lands; and Restoration Agreements paying for specific or projected repairs to municipal infrastructure as a result of the wind project. One local government in the study, the Municipality of Kincardine, also negotiated a lump sum payment of just over $1 million toward the local airport.[6] The value of these agreements were not included in the Community Benefit Agreement data as the contexts all dealt with some type of remuneration for damages or required services directly relating to the project.[7]

It was not uncommon for wind development projects to span across municipal boundaries. Nine (9) projects in total were found to impact more than one municipality. Of these, five (5) developers provided the same benefit contribution to all host communities and two (2) developers were found to provide inconsistent dollar values to different municipalities hosting the same project.

Eleven (11) municipalities were host to multiple wind energy projects. Of those, only two (2) had consistent agreement values with all developers located in their municipality; seven (7) had varying benefit amounts from different projects or were inconsistent in their application of agreement use (i.e. had a community benefit agreement for one project, but not another).

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[6] The Municipality of Chatham-Kent also received contributions toward to its municipally owned airport.

[7] The donations from wind developers to municipal airports were found to be, at least in part, a form of compensation to address direct safety impacts on the airport operations from installed or proposed turbines (Miller, 2014; The London Free Press, 2014; Chatham-Kent, 2017).

The Case of Chatham-Kent

Although isolated from this study, the Municipality of Chatham-Kent demonstrated several interesting qualities relating to wind energy projects that are noted further below.

Chatham-Kent was found to have hosted wind energy projects from all three provincial policy periods, with and without community benefit agreements in place. In addition, although there are other smaller wind energy projects with community partner agreements in Ontario (Walker & Baxter, 2017a), Chatham-Kent appears to be the only municipality in this study cohort to have made arrangements to invest in hosted developments. Lastly, the municipality utilized an additional, observably unique form of agreement that negotiated for the wind energy developer to utilize the 90 per cent municipally owned power utility as a maintenance service provider for finished projects.

The types of the investment arrangements made by Chatham-Kent are speculative and difficult to quantify without additional information. In addition, much of the information received from the municipality was derived from preliminary negotiations and documentation and could not be verified in its final form. These conditions made it difficult or invalid to compare benefits with other Ontario municipalities and benefit values from the Municipality of Chatham-Kent are not included in the analyzed dataset.

Recognizing the above limitations, municipal reports to Council regarding Chatham-Kent wind energy projects did contain information that can be discussed in the

context of other municipal relationships. Chatham-Kent was host to nine projects that were equal to or over 40 MW in size from all three policy periods: four RES; four FIT; and one LRP; although one of the FIT projects was never constructed. The unconfirmed information available for four (4) of these projects is shown, but qualified, in Appendix A.

One project from the RES period appeared to have no benefit, maintenance or partnership agreement associated with its development. Benefit agreement values of $2,000 and $2,130 per MW per year were identified for two projects in the FIT period. A $2,500 per MW per year benefit agreement was considered for the LRP project. These benefit values generally fall within the value ranges observed in other municipalities (see Table 4 and Figure 4) for the respective periods, with the exception of the LRP project, which had a slightly lower value.

Negotiations for the above noted FIT and LRP projects in Chatham-Kent included the provision of maintenance services to the completed projects from the local utility provider. The maintenance agreement contracts were estimated to range from $180,000 to $300,000 per year in value of service provided. This type of agreement was only found within Chatham-Kent. In addition, a commitment of $2.5 million was received from the FIT project developer toward upgrades of the municipally owned airport. A similar arrangement to this was seen in one other Ontario municipality.

Lastly, Chatham-Kent was observed to consider investment opportunities in one of the identified FIT projects and the LRP project. The municipality was able to option up to 15 percent project equity, arranged through the municipally-owned utility. The

preliminary values of these partnerships were estimated be in the order of $2 million for the LRP project and $5 million for the FIT project, equated in additional dividend payments from the utility to the municipality, and dependent upon actual investment and other terms and conditions.

DISCUSSION

The analysis shows that both community benefit agreement use and value increased as the province moved from both the RES to FIT and the FIT to LRP policy periods. A comparison of the observed outcome to the expected influence of the characteristics that formed the basis for our sub-hypotheses statements is presented in Table 6 and discussed further below.

Table 6: Observed Policy Characteristic Impacts on Benefit Agreements

Sub-Hypotheses	Characteristic	Primary Factor	RES to FIT	FIT to LRP	RES to LRP
Observed Performance			↑	↑	↑
Expected Performance					
H_1	Power Contract Rates	Financial	↑	↓	-
H_2	Local Planning Approvals	Structural	↓	-	↓
H_3	Incentives for Local Support	Structural	-	↑	↑
H_4	Opposition Intensity	Actor	↑	↑	↑
H_5	Municipal Familiarity	Actor	↑	↑	↑

For Ontario's policy periods, community benefit agreement outcomes were better in periods that had more opposition (H_4) and where municipalities were more familiar with wind turbine projects (H_5). This supports the common assumption that developers will use community benefit agreements to build support from local residents or decision makers, although does not speak to the efficacy of their use in this manner. It also repeats the findings of the Welsh case where there were increasing expectations of community benefit agreements by municipalities and

developers as part of the wind development process as time progressed (Bristow, Cowell, & Munday, 2012). However, Ontario's situation did not see the same pressure from upper level government to implement these measures (as in the UK recommendations, guidelines, and registries) which may indicate that this occurred organically through community-to-community interaction, such as policy diffusion.

There is indication that the Ontario government's policy decision to offer incentives that encourage local support within the wind energy procurement process (H_3) led to increased benefit agreement use and value for municipalities. This was observed by the increase in community benefit metrics from the earlier periods to the FIT era. This expectation-outcome relationship is again in line with the use of benefit agreements to gain acceptance locally, however, we cannot tell whether this was achieved within the individual communities through this study.

Little evidence was found to indicate that electrical power contract rates and local planning approval requirements influenced community benefit agreement tendencies (H_1). However, we did observe an increase in outcomes from the RES to FIT periods. Also the increase in agreement use and values from the FIT to LRP periods was notably smaller than the change between the previous periods. This could suggest that a price relationship is present, but was overshadowed by other factors in the later periods and not clearly observable. It could also mean that other financial factors not considered in this study played a greater role than anticipated in determining how much project money was available to direct toward municipalities through community benefit agreements.

Lastly, with respect to our identified characteristics, we did not observe the expected outcomes from the presence of local planning approvals (H_2) in any of the period relationships. This refutes the common assumption of benefit use for local support. However, the provincial policy decision to centralize green energy planning approvals was a source of pushback from Ontario municipalities, noted through 'unwilling host' declarations. Although not expected as part of the theory development in this study, it is possible that the H_2 and H_4 characteristics created conflicting positions that were dominated by local opposition in the observations.

As future policy is developed, close attention should be paid to the external policy environment to ensure that decisions on pricing, incentives, and approval centralization do not compete with, or are surpassed by, external influences such as local community opposition and expectations of the development process. Although community benefits are not an obvert goal of wind development in Ontario, understanding how they are influenced by policy characteristics can help decision makers to encourage their use, if desired, or can be lobbied for by municipalities as new green energy programs are created.

In addition to the explored characteristics, the results of this study support the position that there is significant potential for municipalities in Ontario to reap financial benefits from wind energy projects (DECC, 2014; Jami & Walsh, 2017). We see this through two observations made through the analysis. First, one single-tier municipality (Haldimand County) secured over $1.5 million annually in revenue due to the wind energy developments constructed within its boundaries. Second, the overall benefit agreement values identified in this study account for more than $7

million per year in funding to Ontario municipalities. Although this does not address to the actual distributive nature of how municipalities share these values, they are significant enough in magnitude to support the concept that local governments should not ignore wind projects as a potential revenue source.

Concerns remain that, although community benefit agreements are used as a tool to generate local support for wind projects, perceptions of "blood money" make them ineffective in producing actual local gains in this regard (Cowell, Bristow, & Munday, 2011; Walker & Baxter, 2017a). This deters from the concept of using municipalities as the distributive agent for benefits. However, from a local government perspective, the financial supports to municipalities demonstrated above make it difficult to dismiss this tool as a valid part of the wind development process. Walker & Baxter (2017b) point out the importance that procedural justice plays in determination of acceptance in host communities. In addition, there is some indication that requiring community benefits as part of the policy structure can increase public perceptions of legitimacy and mitigate negative framing, such as "bribery" (Walker, Russel, & Kruz, 2017). Future wind development processes that incorporate high levels of citizen participation and mandate community benefit agreements could present a win-win-win opportunity for provincial wind energy goals, successful project implementation, and fiscal resourcing for municipalities.

Lastly, the Municipality of Chatham-Kent demonstrated that there can be unique opportunities to partner with wind energy developers that were not widely considered across other municipalities in Ontario. This example also shows that meaningful

outcomes that are tailored to the community can be achieved in wind development processes where developers are open to working with willing municipalities.

CONCLUSION

Although wind energy is currently placed 'on hold' in Ontario, research in this area remains important for future programs and where implementation is being considered in other jurisdictions. How local communities benefit from these projects is an integral part of understanding policy to support wind energy development. Building on the findings of this study, there is opportunity to further consider the role that community benefit agreements play in public perceptions and success of local wind energy projects. The information presented here can assist in selecting communities for more detailed analysis, focusing on procedural and distributive justice in Ontario on a broader scale. Lastly, more work could be carried out to include the impacts of smaller wind developments and make a more detailed examination of the approaches taken by the Municiaplity of Chataham-Kent to partner with wind energy projects.

This work contributes to further the understanding of "the 'how' of benefits distribution" noted as an important area needing further policy understanding (Walker, Baxter, & Ouellette, 2014, p. 741). For Ontario, we saw increased use and value of municipal community benefit agreements across three policy periods. The research found that although electrical pricing, approval processes, and special incentives had varying impacts, community benefit agreement outcomes most closely aligned with the expectations of local/municipal opposition and the overall familiarity of municipalities with the wind developments as characteristics of the policy environment.

These results can inform future wind energy implementation policy on how their choices influence whether communities get benefit agreements. This is important for municipalities, as this study shows that wind energy projects can provide a valuable, long-term, revenue source to support local initiatives.

The assembled data also forms the most comprehensive list of Ontario community benefit agreements and their values to date, which will hopefully increase transparency as host municipalities negotiate future wind energy developments within their communities.

BIBLIOGRAPHY

Aitken, M. (2010). Wind power and community benefits: Challenges and opportunities. *Energy Policy*, 38, 6066-6075.

Baxter, J., Morzarina, R., & Hirsch, R. (2013). A case-control study of support/opposition to wind turbines: Perceptions of health risk, economic benefits, and community conflict. *Energy Policy*, 61: 931-943.

Bristow, G., Cowell, R., & Munday, M. (2012). Windfalls for whom? The evolving notion of 'community' in community benefit provisions from wind farms. *Geoforum*, 43: 1108-1120.

Bues, A. (2018). Planning, Protest, and Contentious Politics: The Governance of Wind energy in Brandenburg and Ontario. *The Planning Review*, 54(4), 34-45.

CanWEA. (2008). *Wind. For My Community.* Canadian Wind Energy Association. Retrieved February 02, 2020, from https://canwea.ca/pdf/canwea-municipality-brochure-web-v1.pdf

CanWEA. (2019, May). *Wind Markets, Ontario*. Retrieved from Canadian Wind Energy Association: https://canwea.ca/wind-energy/ontario-market-profile/

Chatham-Kent. (2017, October 11). South Kent Wind Recognized for Airport Improvements. *Chatham-Kent Media Centre*. Retrieved June 6, 2020, from https://www.chatham-kent.ca/News/Pages/SouthKentWindRecognizedforAirportImprovements.aspx

Christidis, T., & Law, J. (2012). Annoyance, Health Effects, and Wind Turbines: Exploring Ontario's Planning Processes. *Canadian Journal of Urban Research*, 21 (1): 81-105.

Christidis, T., & Law, J. (2013). Mapping Ontario's Wind turbines: Challenges and Limitations. *International Journal of Geo-Information*, 2, 1092-1105.

Christidis, T., Lewis, G., & Bigelow, P. (2017). Understanding support and opposition to wind turbine development in Ontario, Canada and assessing possible steps for future development. *Renewable Energy*, 112, 93-103.

Cowell, R., Bristow, G., & Munday, M. (2011). Acceptance, acceptability and environmental justice: the role of community benefits in wind energy development. *Journal of Environmentla Planning and Management*, 54(4): 539-557.

DECC. (2014). *Community Benefits from Onshore Wind Developments: Best Practice Guidance for England.* Department of Energy & Climate Change, UK. Retrieved from www.gov.uk/decc

Duguid, B. (2010, April 1). Minister of Energy and Infrastructure. Toronto, Ontario. Retrieved from http://ieso.ca/-/media/files/ieso/document-library/ministerial-directives/2010/20100401-re-green-energy-investment-agreement-with-government-of-ontario-and-korean-consortium.pdf

Fast, S., & Mabee, W. (2015). Place-making and trust-building: The influence of policy on host community responses to wind farms. *Energy Policy*, 81, 27-37.

Fast, S., Mabee, W., Baxter, J., Christidis, T., Driver, L., Hill, S., . . . Tomkow, M. (2016). Lessons learned from Ontario wind energy disputes. *Nature Energy*, 1, 1-7.

Government of Canada. (2016, June 22). *Environment and Climate Change Canada*. Retrieved from Wind Atlas: http://www.windatlas.ca/nav-en.php?field=E1&height=80&season=ANU&no=24&lakes=1&roads=1

Hill, B. (2017, February 24). Ontario energy minister admits mistake with green energy program. *Global news*. Retrieved February 20, 2020, from https://globalnews.ca/news/3272095/ontario-energy-minister-admits-mistake-with-green-energy-program/

Holburn, G., Lui, K., & Morand, C. (2010). Policy risk and private investment in Ontario's wind power sector. *Canadian Public Policy*, XXXVI(4), 465-486.

IESO. (2015, November 10). *Independent Electricity Systems Operators*. Retrieved from Wind Contracts: https://www.powerauthority.on.ca/current-electricity-contracts/wind

IESO. (2016, April 12). *LRP I RFP - Selected Proponent List.* Retrieved February 20, 2020, from IESO: http://www.ieso.ca/-/media/Files/IESO/Document-Library/energy-procurement/LRP/LRPI-Selected-Proponent-List-20160412.pdf?la=en

IESO. (2019, November). *Energy Procurement Programs and Contracts*. Retrieved from IESO: http://www.ieso.ca/en/Sector-Participants/Energy-Procurement-Programs-and-Contracts/Large-Renewable-Procurement

IESO. (2019). *Ontario's Supply Mix*. Retrieved from IESO: http://www.ieso.ca/en/Learn/Ontario-Supply-Mix/Ontario-Energy-Capacity

IESO. (2019, December). *Wind Power in Ontario*. Retrieved from IESO: http://www.ieso.ca/localContent/map/default.htm

IESO. (2020). *Feed-in Tariff Program*. Retrieved from IESO: http://www.ieso.ca/Sector-Participants/Feed-in-Tariff-Program/FIT-Archive

IESO. (2020). *Large Renewable Procurement*. Retrieved February 20, 2020, from IESO: http://www.ieso.ca/Sector-Participants/Energy-Procurement-Programs-and-Contracts/Large-Renewable-Procurement

Ipsos Reid. (2010). *Wind Energy in Ontario.* Retrieved July 10, 2020, from https://www.ipsos.com/sites/default/files/publication/2010-07/4868.pdf

Jami, A. A., & Walsh, P. R. (2017). From consultation to collaboration: A participatory framework for positive community engagement with wind energy projects in Ontario, Canada. *Energy Research & Social Science*, 27, 14-24.

Kerr, S., Johnson, K., & Weir, S. (2017). Understanding community benefit payments from renewable energy development. *Energy Policy*, 105,202-211.

Liljenfeldt, J., & Pettersson, O. (2017). Distributional justice in Sweedish wind power development - An odds ration analysis of windmill localization and local residents' socio-economic characteristics. *Energy Policy*, 105, 648-657.

Loudermilk, M. (2017, January). Renewable Energy Policy and Wind Generation in Ontario. *Policy Brief, Energy Policy and Management Centre*. Ivey Business School.

Mabee, W. E., Mannion, J., & Carpenter, T. (2012). Comparing the feed-in tarrif incentives for renewable electicity in Ontario and Germany. *Energy Policy*, 40, 480-489.

Macdonald, C., Glass, J., & Creamer, E. (2017). What is the benefit of community benefits? Exploring local perceptions of the provision of community benefits

from a commercial wind energy project. *Scottish Geographical Journal*, 133(3-4), 172-191.

McRobert, D., Tennent-Riddell, J., & Walker, C. (2016). Ontari's Green Economy and Geren Energy Act: Why a well-intentioned law is mired in controversy and opposed by rural communities. *Renewable Energy Law & Policy Review*, 2, 91-112.

Miller, S. (2014, May 28). Kincardine cashing in on wind deal. *CTV London*. Retrieved June 6, 2020, from https://london.ctvnews.ca/kincardine-cashing-in-on-wind-deal-1.1842070?cache=yes

Ministry of Energy. (2015). *Renewable Energy Development in Ontario: A guide for Municipalities.* Renewable Energy Facilitation Office, Ministry of Energy. Retrieved from https://collections.ola.org/mon/29012/331667.pdf

Ministry of Energy. (2015). *Renewable Energy Development in Ontario: A Guide for Municipalities.* Renewable Energy Facilitatoin Office, Ministry of Energy.

Ministry of Environment. (2015, November 9). *Achieving Balance: Ontario's Long-Term Energy Plan*. Retrieved from Ministry of Environment Ontario: http://www.energy.gov.on.ca/en/ltep/achieving-balance-ontarios-long-term-energy-plan/#a-reliable-and-clean-supply

Ministry of Environment and Energy. (2019, March 15). *Renewable Energy Project Listings.* Retrieved from Environment and Energy, Government of Ontario: https://www.ontario.ca/page/renewable-energy-projects-listing

MMAH. (2015, April 30). Municipal Boundaries. Ministry of Municipal Affairs and Housing, Ontario. Retrieved May 2019, from https://data.ontario.ca/dataset/municipal-boundaries

Munday, M., Bristow, G., & Cowell, R. (2011). Wind farms in rural areas: How far do community benefits from wind farms represent a local economic devleopment opportunity? *Journal of Rural Studies*, 27, 1-12.

Ontario. (2010). *Ontario's Long-Term Energy Plan: Building Our Clean Energy Future.* Toronto: Queen's Printer for Ontario. Retrieved February 20, 2020, from https://files.ontario.ca/books/final_mei_ltep_en_acc.pdf

Ontario. (2018, December 2018). Ontario Scraps the Green Eneergy Act. *Ontario Newsroom*. Retrieved February 20, 2020, from https://news.ontario.ca/mndmf/en/2018/12/ontario-scraps-the-green-energy-act.html

Ontario. (2019, March 27). *Archived - The End of Coal*. Retrieved from Environment and Energy: https://www.ontario.ca/page/end-coal

Ontario Power Authority. (2010). Feed-In Tariff Program: Program Overview. Retrieved January 2020, from http://www.ontla.on.ca/library/repository/mon/25005/310249.pdf

Ontario Unwilling Hosts. (2019, March 15). *Ontario Unwilling Hosts*. Retrieved from http://ontario-unwilling-hosts.org/

Ontario Wind Resistance. (n.d.). *Maps*. Retrieved March 15, 2019, from Ontario Wind Resistance: https://ontario-wind-resistance.org/maps/

Ontario Wind Turbines. (2015, November 10). *Ontario Wind Turbines, Version c18*. Retrieved from http://ontario-wind-turbines.org/owt-maps-c18.html

O'Sullivan, E., Rassel, G. R., & Berner, M. (2008). *Research Methods for Public Administrators.* White Plains, N.Y.: Longman Publishers USA.

Quick, M., Law, J., Christidis, T., & Paller, C. (2016). Exploring the Socioeconomic Composition of Wind Farm Communities in Ontario: Implications for Wind Farm Planning and Policy. *Canadian Journal of Urban Research*, 25(2), 62-72.

Shreve, E. (2018, June 4). Ontario election muddies red-hot green energy file. *Chatham Daily News*. Retrieved February 20, 2020, from https://lfpress.com/news/local-news/election-muddies-red-hot-green-energy-file

Simpson, B. (2014, May 21). Lambton County councillors vote in favour of participating in ERT case. *Sarnia Observer*, pp. http://www.theobserver.ca/2014/05/21/lambton-county-councillors-vote-in-favour-of-participating-in-ert-case.

Stokes, L. (2013). The politics of renewable energy policies: The case of feed-in tariffs in Ontario, Canada. *Energy Policy*, 56, 490-500.

Stokes, L. C. (2016). Electoral Backlash against Climate Policy: A Natural Experiment on Retrospective Voting and Local Resistance to Public Policy. *American Journal of Political Science*, 60(4), 958-974.

Strachan, P. A., Cowell, R., Ellis, G., Sherry-Brennan, F., & Toke, D. (2015). Promoting community renewable energy in a corporate energy world. *Sustainable Develoopment*, 23: 96-109.

The Canadian Press. (2009, February 10). New law will keep NIMBY-ism from stopping green projects: Ont. premier. *CBC News, Technology & Science*. Retrieved from https://www.cbc.ca/news/technology/new-law-will-keep-nimby-ism-from-stopping-green-projects-ont-premier-1.805978

The London Free Press. (2014, August 22). Oxford wind turbines could interfere with airport radar systems in London and Hamilton. *The London Free Press*. Retrieved June 6, 2020, from https://lfpress.com/2014/08/22/oxford-wind-turbines-could-interfere-with-airport-radar-systems-in-london-and-hamilton

Toke, D., Breukers, S., & Wolsink, M. (2008). Wind power deployment outcomes: How can we account for the differences? *Renewable & Sustainable Energy Reviews*, 12, 1129-1147.

Walker, B. J., Russel, D., & Kruz, T. (2017). Community benefits or community bribes? An experimental analysis of strategies for managing community perceptions of bribery surrounding the siting of renewable energy projects. *Environment and Behavior*, 49(1):59-83.

Walker, B. J., Wiersma, B., & Bailey, E. (2014). Community benefits, framing and the social acceptance of offshore wind farms: An experimental study in England. *Energy Research & Social Science*, 3: 46-54.

Walker, C., & Baxter, J. (2017a). "It's easy to throw rocks at a corporation": wind energy development and distributive justice in Canada. *Environment Policy and Planning*, 19(6), 754-768.

Walker, C., & Baxter, J. (2017b). Procedural justice in Canadian wind energy development: A comparison of community-based and technocratic siting processes. *Energy Research & Social Science*, 29, 160-169.

Walker, C., Baxter, J., & Ouellette, D. (2014). Beyond rhetoric to understanding determinants of wind turbine support and conflict in two Ontario, Canada communities. *Environment and Planning A*, 46(3), 730-745.

Walker, C., Baxter, J., & Ouellette, D. (2015). Adding insult to injury: The development of psychosocial stress in Ontario wind turbine communities. *Social Science & Medicine*, (133) 358-365.

Yatchew, A., & Baziliauskas, A. (2011). Ontario feed-in-tariff programs. *Energy Policy*, 39: 3885-3893.

APPENDIX A

COMMUNITY BENEFIT AGREEMENT DATA

Ontario Municipal Benefit Agreements with Large Wind Projects (Arranged by Municipality)

Municipality	Wind Project	No. Turbines*	Rated Capacity* (MW)	OPA/IESO Contract Date[1]	Provincial Framework[1]		Benefit Agreement Y	N	N/A	$ / yr	$/MW/yr	Agreement Date	Other Agreements
Haldimand County	Grand Renewable Energy Park	67	148.6	2-Aug-11	GEIA	FIT	X			$ 520,100	$ 3,500	26-Sep-11	Compensation, Transmission
Haldimand County	Niagara Region Wind Farm	30	90	15-Apr-11	FIT 1	FIT	X			$ 315,000	$ 3,500	26-Sep-11	Compensation, Transmission
Haldimand County	Port Dover Nanicoke Wind Farm	45	81	4-Jun-10	FIT 1	FIT	X			$ 283,500	$ 3,500	26-Sep-11	Compensation, Transmission
Haldimand County	Summerhaven Wind Energy Centre	56	124.4	30-Apr-10	FIT 1	FIT	X			$ 435,400	$ 3,500	26-Sep-11	Compensation, Transmission
Municipality of Bayham	Erie Shores Wind Farm	29	43.5	24-Nov-04	RES I	RES		X		$ -	$ -		Compensation, Transmission
Municipality of Bluewater	Bluewater Wind Project	37	59.9	30-Sep-11	FIT 1	FIT	X			$ 149,850	$ 2,500	26-Jun-18	Compensation, Transmission
Municipality of Bluewater	Goshen Wind Energy Centre	13	21.06	30-Sep-11	FIT 1	FIT	X			$ 52,650	$ 2,500	26-Jun-18	Compensation
Municipality of Bluewater	Grand Bend Wind Farm	33	81.9	27-Jul-11	FIT 1	FIT	X			$ 286,787	$ 3,500	23-Jan-17	Compensation, Transmission
Municipality of Chatham-Kent	East Lake St. Clair	55	99.0	5-Aug-11	FIT 1	FIT			X				
Municipality of Chatham-Kent	Erieau	55	99.0	5-Aug-11	FIT 1	FIT			X				
Municipality of Chatham-Kent	North Kent 1 Wind Project	36	100.0	1-Apr-15	GEIA	FIT			X	$ 200,000	$ 2,000		Partnership, Maintenance Contract
Municipality of Chatham-Kent	Otter Creek Wind Farm Project (CANCELLED)	12	50.0	1-Apr-16	LRP I	LRP			X				
Municipality of Chatham-Kent	Raleigh Wind Energy Centre (Dillon)	52	78.0	12-Jan-09	RES II	RES			X				
Municipality of Chatham-Kent	Romney Wind Energy Centre	16	57.6	1-Apr-16	LRP I	LRP			X	$ 144,000	$ 2,500		Partnership, Maintenance Contract
Municipality of Chatham-Kent	Port Alma - T1 (KEPA)	44	101.0	21-Nov-05	RES II	RES			X				
Municipality of Chatham-Kent	Port Alma - T3 (Kruger Chatham)	44	99.4	14-Jan-09	RES III	RES			X	$ -	$ -		
Municipality of Chatham-Kent	South Kent Wind Project	124	270.0	2-Aug-11	GEIA	FIT			X	$ 575,000	$ 2,130		Maintenance Contract, Airport
Municipality of Chatham-Kent	Talbot Wind Energy Project (Spence)	43	99.0	14-Jan-09	RES III	RES			X				
Municipality of Dutton Dunwich	Strong Breeze Wind Farm (CANCELLED)	20	57.5	1-Apr-16	LRP I	LRP	X			$ 60,000	$ 3,000	1-Jul-15	
Municipality of Kincardine	Armow Wind Project	92	180	2-Aug-11	GEIA	FIT	X			$ 630,000	$ 3,500	21-May-14	Compensation, Airport
Municipality of Kincardine	Enbridge Ontario Wind Energy Project (Underwood & Cruickshank)	110	181.5	21-Nov-04	RES II	RES		X		$ -	$ -		Compensation
Municipality of Lambton Shores	Cedar Point Wind Farm Project	27	58.7	29-Jul-11	FIT 1	FIT		X		$ -	$ -		Compensation
Municipality of Lambton Shores	Jericho Wind Energy Centre	83	134.5	30-Sep-11	FIT 1	FIT	X			$ 470,750	$ 3,500	31-Mar-15	Compensation
Municipality of North Middlesex	Bornish Wind Energy Centre	45	73.5	30-Sep-11	FIT 1	FIT	X			$ 257,250	$ 3,500	25-Oct-13	Compensation
Municipality of South Huron	Goshen Wind Energy Centre	50	81	30-Sep-11	FIT 1	FIT	X			$ 283,500	$ 3,500	15-Sep-14	Compensation, Transmission
Municipality of South Huron	Grand Bend Wind Farm	8	19.9	27-Jul-11	FIT 1	FIT	X			$ 69,524	$ 3,500	1-Jan-15	Compensation
Norfolk County	Erie Shores Wind Farm	24	36	24-Nov-04	RES I	RES		X		$ -	$ -		Compensation
Prince Edward County	White Pines Wind Farm (CANCELLED)	29	59.5	15-Jun-10	FIT 1	FIT			X				
Town of Grand Valley	Grand Valley Wind Farm - Phase 3	15	37.5	15-Sep-11	FIT 1	FIT		X		$ -	$ -		Compensation
Town of Kingsville	Gosfield	22	51	13-Jan-09	RES III	RES			X				
Town of Lakeshore	Belle River Wind Project	40	100	22-Sep-14	GEIA	FIT	X			$ 300,000	$ 3,000	24-May-16	Compensation
Town of Lakeshore	Comber Wind Farm	72	166	2-May-10	FIT 1	FIT		X		$ -	$ -		Compensation
Town of Lakeshore	Pointe Aux Roches	27	49	13-May-10	FIT 1	FIT	X			$ 44,280	$ 904	13-Jul-10	Compensation
Town of Lakeshore	Romney Wind Energy Centre	1	3.6	1-Apr-16	LRP I	LRP	X			$ 15,000	$ 4,167	6-Nov-18	Compensation, Transmission
Town of Plympton-Wyoming	Cedar Point Wind Farm Project	27	58.7	29-Jul-11	FIT 1	FIT		X		$ -	$ -		Compensation, Collection
Townhship of Malahide	Erie Shores Wind Farm	13	19.5	24-Nov-04	RES I	RES		X		$ -	$ -		Compensation
Township of Adelaide-Metcalfe	Adelaide Wind Energy Centre	37	60	30-Sep-11	FIT 1	FIT	X			$ 11,542	$ 192	8-Sep-15	Restoration
Township of Adelaide-Metcalfe	Suncor Energy Adelaide Wind Farm	18	40	29-Jul-11	FIT 1	FIT		X		$ -	$ -		Compensation
Township of Amaranth	Grand Valley Wind Farm - Phase 3	1	2.5	15-Sep-11	FIT 1	FIT		X		$ -	$ -		Compensation
Township of Amaranth	Melancthon II (Amaranth)	18	27	21-Nov-05	RES II	RES			X				
Township of Ashfield-Colborne-Wawanosh	K2 Wind Farm	140	270	2-Aug-11	GEIA	FIT	X			$ 702,000	$ 2,600	5-Mar-13	Compensation, Collection
Township of Ashfield-Colborne-Wawanosh	Kingsbridge 1 Wind	21	40	24-Dec-06	RES I	RES			X				
Township of Frontenac Islands	Wolfe Island Wind Farm	86	197.8	21-Nov-05	RES II	RES	X			$ 645,000	$ 3,261	1-Jun-06	Compensation
Township of Huron-Kinloss	Ripley Wind Farm	38	76	21-Nov-05	RES II	RES	X			$ 7,500	$ 99	20-Mar-12	Compensation, Restoration
Township of Loyalist	Amherst Island Wind Farm Project	26	74.3	25-Mar-11	FIT 1	FIT	X			$ 520,100	$ 7,000	14-Dec-15	Compensation
Township of Melancthon	Dufferin Wind Farm	49	99.1	23-Jun-10	FIT 1	FIT	X			$ 264,201	$ 2,666	31-Jul-13	Compensation
Township of Melancthon	Melancthon II (Amaranth)	70	105	21-Nov-05	RES II	RES	X			$ 280,000	$ 2,667	24-Aug-07	Compensation
Township of Melancthon	Melancthon I	45	67.5	24-Nov-04	RES I	RES	X			$ 45,000	$ 667	24-Jul-07	Compensation
Township of North Stormont	Nation Rise Wind Farm (CANCELLED)	29	100	1-Apr-16	LRP I	LRP	X			$ 300,000	$ 3,000	10-Apr-18	Compensation
Township of Wainfleet	Niagara Region Wind Farm	4	12	15-Apr-11	FIT 1	FIT		X		$ -	$ -		
Township of Warwick	Cedar Point Wind Farm Project	1	2.2	29-Jul-11	FIT 1	FIT		X		$ -	$ -		
Township of Warwick	Jericho Wind Energy Centre	12	19.2	30-Sep-11	FIT 1	FIT	X			$ 96,000	$ 5,000	26-Jun-14	Compensation
Township of West Lincoln	Niagara Region Wind Farm	44	132	15-Apr-11	FIT 1	FIT	X			$ 462,000	$ 3,500	16-Mar-16	Compensation, Transmission

NOTES:

* within municipal boundary

[1] (Loudermilk, 2017)

Not used in study

Ontario Municipal Benefit Agreements with Large Wind Projects (Arranged by Project)

Municipality	Wind Project	No. Turbines*	Rated Capacity* (MW)	OPA/IESO Contract Date[1]	Provincial Framework[1]		Benefit Agreement Y	N	N/A	$ / yr	$/MW/yr	Agreement Date	Other Agreements
Township of Adelaide-Metcalfe	Adelaide Wind Energy Centre	37	60	30-Sep-11	FIT 1	FIT	X			$ 11,542	$ 192	8-Sep-15	Restoration
Township of Loyalist	Amherst Island Wind Farm Project	26	74.3	25-Mar-11	FIT 1	FIT	X			$ 520,100	$ 7,000	14-Dec-15	Compensation
Municipality of Kincardine	Armow Wind Project	92	180	2-Aug-11	GEIA	FIT	X			$ 630,000	$ 3,500	21-May-14	Compensation, Airport
Town of Lakeshore	Belle River Wind Project	40	100	22-Sep-14	GEIA	FIT	X			$ 300,000	$ 3,000	24-May-16	Compensation
Municipality of Bluewater	Bluewater Wind Project	37	59.9	30-Sep-11	FIT 1	FIT	X			$ 149,850	$ 2,500	26-Jun-18	Compensation, Transmission
Municipality of North Middlesex	Bornish Wind Energy Centre	45	73.5	30-Sep-11	FIT 1	FIT	X			$ 257,250	$ 3,500	25-Oct-13	Compensation
Municipality of Lambton Shores	Cedar Point Wind Farm Project	27	58.7	29-Jul-11	FIT 1	FIT		X		$ -	$ -		Compensation
Town of Plympton-Wyoming	Cedar Point Wind Farm Project	27	58.7	29-Jul-11	FIT 1	FIT		X		$ -	$ -		Compensation, Collection
Township of Warwick	Cedar Point Wind Farm Project	1	2.2	29-Jul-11	FIT 1	FIT		X		$ -	$ -		
Town of Lakeshore	Comber Wind Farm	72	166	2-May-10	FIT 1	FIT		X		$ -	$ -		Compensation
Township of Melancthon	Dufferin Wind Farm	49	99.1	23-Jun-10	FIT 1	FIT	X			$ 264,201	$ 2,666	31-Jul-13	Compensation
Municipality of Chatham-Kent	East Lake St. Clair	55	99.0	5-Aug-11	FIT 1	FIT			X				
Municipality of Kincardine	Enbridge Ontario Wind Energy Project (Underwood & Cruickshank)	110	181.5	21-Nov-04	RES II	RES		X		$ -	$ -		Compensation
Municipality of Bayham	Erie Shores Wind Farm	29	43.5	24-Nov-04	RES I	RES		X		$ -	$ -		Compensation, Transmission
Norfolk County	Erie Shores Wind Farm	24	36	24-Nov-04	RES I	RES		X		$ -	$ -		Compensation
Townhship of Malahide	Erie Shores Wind Farm	13	19.5	24-Nov-04	RES I	RES		X		$ -	$ -		Compensation
Municipality of Chatham-Kent	Erieau	55	99.0	5-Aug-11	FIT 1	FIT			X				
Town of Kingsville	Gosfield	22	51	13-Jan-09	RES III	RES			X				
Municipality of Bluewater	Goshen Wind Energy Centre	13	21.06	30-Sep-11	FIT 1	FIT	X			$ 52,650	$ 2,500	26-Jun-18	Compensation
Municipality of South Huron	Goshen Wind Energy Centre	50	81	30-Sep-11	FIT 1	FIT	X			$ 283,500	$ 3,500	15-Sep-14	Compensation, Transmission
Municipality of Bluewater	Grand Bend Wind Farm	33	81.9	27-Jul-11	FIT 1	FIT	X			$ 286,787	$ 3,500	23-Jan-17	Compensation, Transmission
Municipality of South Huron	Grand Bend Wind Farm	8	19.9	27-Jul-11	FIT 1	FIT	X			$ 69,524	$ 3,500	1-Jan-15	Compensation
Haldimand County	Grand Renewable Energy Park	67	148.6	2-Aug-11	GEIA	FIT	X			$ 520,100	$ 3,500	26-Sep-11	Compensation, Transmission
Town of Grand Valley	Grand Valley Wind Farm - Phase 3	15	37.5	15-Sep-11	FIT 1	FIT		X		$ -	$ -		Compensation
Township of Amaranth	Grand Valley Wind Farm - Phase 3	1	2.5	15-Sep-11	FIT 1	FIT		X		$ -	$ -		Compensation
Municipality of Lambton Shores	Jericho Wind Energy Centre	83	134.5	30-Sep-11	FIT 1	FIT	X			$ 470,750	$ 3,500	31-Mar-15	Compensation
Township of Warwick	Jericho Wind Energy Centre	12	19.2	30-Sep-11	FIT 1	FIT	X			$ 96,000	$ 5,000	26-Jun-14	Compensation
Township of Ashfield-Colborne-Wawanosh	K2 Wind Farm	140	270	2-Aug-11	GEIA	FIT	X			$ 702,000	$ 2,600	5-Mar-13	Compensation, Collection
Township of Ashfield-Colborne-Wawanosh	Kingsbridge 1 Wind	21	40	24-Dec-06	RES I	RES			X				
Township of Amaranth	Melancthon II (Amaranth)	18	27	21-Nov-05	RES II	RES			X				
Township of Melancthon	Melancthon II (Amaranth)	70	105	21-Nov-05	RES II	RES	X			$ 280,000	$ 2,667	24-Aug-07	Compensation
Township of Melancthon	Melancthon I	45	67.5	24-Nov-04	RES I	RES	X			$ 45,000	$ 667	24-Jul-07	Compensation
Township of North Stormont	Nation Rise Wind Farm (CANCELLED)	29	100	1-Apr-16	LRP I	LRP	X			$ 300,000	$ 3,000	10-Apr-18	Compensation
Haldimand County	Niagara Region Wind Farm	30	90	15-Apr-11	FIT 1	FIT	X			$ 315,000	$ 3,500	26-Sep-11	Compensation, Transmission
Township of Wainfleet	Niagara Region Wind Farm	4	12	15-Apr-11	FIT 1	FIT		X		$ -	$ -		
Township of West Lincoln	Niagara Region Wind Farm	44	132	15-Apr-11	FIT 1	FIT	X			$ 462,000	$ 3,500	16-Mar-16	Compensation, Transmission
Municipality of Chatham-Kent	North Kent 1 Wind Project	36	100.0	1-Apr-15	GEIA	FIT			X	$ 200,000	$ 2,000		Partnership, Maintenance Contract
Municipality of Chatham-Kent	Otter Creek Wind Farm Project (CANCELLED)	12	50.0	1-Apr-16	LRP I	LRP			X				
Town of Lakeshore	Pointe Aux Roches	27	49	13-May-10	FIT 1	FIT	X			$ 44,280	$ 904	13-Jul-10	Compensation
Municipality of Chatham-Kent	Port Alma - T1 (KEPA)	44	101.0	21-Nov-05	RES II	RES			X				
Municipality of Chatham-Kent	Port Alma - T3 (Kruger Chatham)	44	99.4	14-Jan-09	RES III	RES			X	$ -	$ -		
Haldimand County	Port Dover Nanicoke Wind Farm	45	81	4-Jun-10	FIT 1	FIT	X			$ 283,500	$ 3,500	26-Sep-11	Compensation, Transmission
Municipality of Chatham-Kent	Raleigh Wind Energy Centre (Dillon)	52	78.0	12-Jan-09	RES II	RES			X				
Township of Huron-Kinloss	Ripley Wind Farm	38	76	21-Nov-05	RES II	RES	X			$ 7,500	$ 99	20-Mar-12	Compensation, Restoration
Municipality of Chatham-Kent	Romney Wind Energy Centre	16	57.6	1-Apr-16	LRP I	LRP			X	$ 144,000	$ 2,500		Partnership, Maintenance Contract
Town of Lakeshore	Romney Wind Energy Centre	1	3.6	1-Apr-16	LRP I	LRP	X			$ 15,000	$ 4,167	6-Nov-18	Compensation, Transmission
Municipality of Chatham-Kent	South Kent Wind Project	124	270.0	2-Aug-11	GEIA	FIT			X	$ 575,000	$ 2,130		Maintenance Contract, Airport
Municipality of Dutton Dunwich	Strong Breeze Wind Farm (CANCELLED)	20	57.5	1-Apr-16	LRP I	LRP	X			$ 60,000	$ 3,000	1-Jul-15	
Haldimand County	Summerhaven Wind Energy Centre	56	124.4	30-Apr-10	FIT 1	FIT	X			$ 435,400	$ 3,500	26-Sep-11	Compensation, Transmission
Township of Adelaide-Metcalfe	Suncor Energy Adelaide Wind Farm	18	40	29-Jul-11	FIT 1	FIT		X		$ -	$ -		Compensation
Municipality of Chatham-Kent	Talbot Wind Energy Project (Spence)	43	99.0	14-Jan-09	RES III	RES			X				
Prince Edward County	White Pines Wind Farm (CANCELLED)	29	59.5	15-Jun-10	FIT 1	FIT			X				
Township of Frontenac Islands	Wolfe Island Wind Farm	86	197.8	21-Nov-05	RES II	RES	X			$ 645,000	$ 3,261	1-Jun-06	Compensation

NOTES:

* within municipal boundary

[1] (Loudermilk, 2017)

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