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Renewable Energy and Energy Autonomy: How Indigenous Peoples in Canada are Shaping an Energy Future.

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In 2015, the Liberal Party of Canada formed a majority federal government on a platform that included prioritizing Nation-to-Nation relationships with Indigenous (First Nations, Inuit, and Métis) peoples in the country and re-asserting global leadership in climate change action by moving away from fossil fuel-based extraction and toward renewable energy initiatives. It may be argued that addressing both of these issues, advancing Indigenous-Settler reconciliation and mitigating climate change, can be done in the same space. Indeed, though Indigenous peoples in Canada and elsewhere have recently moved forward with renewable energy initiatives within their Territories, there has been very little critical analysis on just how such projects have been operationalized and whether renewable energy can or even should be considered a vehicle for reconciliation efforts. In this paper, we present a systematic review of Canadian literature (spanning 1980 to 2017) concerning Indigenous peoples' involvement in renewable energy in order to better understand the stated motivations and desires of Indigenous peoples in Canada taking leadership, partnering in, and/or participating in the renewable energy sector. Using a series of keyword search strings across three academic databases, two theses databases, and a grey literature search, we retrieved literature (n=980) that was subjected to four exclusionary forms, then thematically analyzed the included literature (n=26). Our findings suggest Indigenous peoples' experiences and motivations are varied, yet many are developing renewable energy in their Territories to break free of colonial ties and move towards energy autonomy, establish more reliable energy systems, and reap the long-term financial benefits that clean energy can provide. Despite the apparent advantages seen throughout most of the literature reviewed here, we suggest further research in this area is necessary before this kind of positive rhetoric of renewable energy in Indigenous communities builds enough momentum that proponents become blind to possible shortcomings. We conclude with a broader discussion of

62 the interactions between Indigenous-Settler reconciliation in the context of renewable energy
63 projects as well as offering indicators for future research to fill current knowledge gaps.

64 **Keywords (max 6): Renewable energy; Indigenous peoples; energy sovereignty; nation-to-**
65 **nation relationships; Indigenous-Settler reconciliation; free, prior, and informed consent**

Draft

Introduction

Indigenous peoples in Canada continue to struggle with the ongoing effects of colonialism stemming in part from the forced dispossession of territory, and manifesting in physical, mental, cultural, and social trauma through generations of Indigenous peoples (Alfred 2009). Indigenous scholar Taiaiake Alfred (2009) argues that this historical and ongoing trauma “have created a situation in which the opportunities for a self-sufficient, healthy and autonomous life for [Indigenous] people on individual and collective bases are extremely limited.” (Alfred 2009, p. 42). Our research, then, involves a systematic review of literature focused on renewable energy in Indigenous communities as an opportunity for self-sufficiency, health, and autonomy for Indigenous peoples in Canada.

In December 2015, Justice Murray Sinclair, Chair of the Truth and Reconciliation Commission of Canada (TRC), released the Commission’s Final Report detailing the intergenerational trauma and further disastrous consequences of the Indian Residential School system that lasted over 120 years in Canada, affecting thousands of First Nations, Inuit and Métis peoples across Canada (Truth and Reconciliation Commission of Canada 2015a), and providing further confirmation of the intergenerational trauma research findings put forth by Indigenous scholars in Canada (e.g., Alfred 2009; Bombay et al. 2014). Among the outputs of the TRC were 94 Calls to Action that support reconciliation and healing in Canada as well as the encouragement of meaningful dialogue and collaboration between Indigenous peoples and Settler¹ Canadians. The Calls address topics including Health, Language, Education, Business and Reconciliation. For the

¹ *Settler*, or *non-Indigenous*, refers generally to those people whose ancestors were not originally from the Territory known as Canada. While it is beyond the scope of this paper, we recognize the diversity of Settler identities and immigration stories, and the complex dynamics that impose inequitable power structures within Settler groups.

purposes of this paper, we have chosen to focus on the latter, with a particular focus on Call 92 (Truth and Reconciliation Commission of Canada 2015b). The final TRC report has also come at a time when the evidence is clear that we also need to heal our relationship with the planet – as the impacts of anthropogenic climate change and associated problems with regional pollution continue to threaten biodiversity, global health, and socio-economic conditions around the globe (Helm 2017; Intergovernmental Panel on Climate Change 2014), and have compounded with the legacy of Residential Schools to disproportionately burden Indigenous peoples (Berkes 2009).

As global population numbers increase beyond 7.5 billion, and lower resource nations are joining higher resource nations of the world in becoming large energy consumers (Nejat et al. 2015), these threats to our planet are exacerbated. To meet these established energy needs – and in fact, to reduce and rethink these needs – national governments have relied upon conservation, efficiency, and a somewhat balanced combination of renewable² and non-renewable resources for electricity generation. Yet under pressures to better sustain these energy systems, Canada is phasing out fossil fuel-based sources and setting renewable energy targets (McCarthy 2016). Parallel strategies – including plans to improve conservation and energy efficiency standards – also show promise in Canada and other nations looking to reduce emissions (Gamtessa 2013; Wang et al. 2016).

² For this research, the term renewable energy (RE) was defined as “sources that are continually replenished by nature and derived directly from the sun (such as thermal, photo-chemical, and photo-electric), indirectly from the sun (such as wind, hydropower, and photosynthetic energy stored in biomass), or from other natural movements and mechanisms of the environment (such as geothermal and tidal power) (Ellabban et al. 2014; p. 749). The term RE is often used interchangeably with other terms including alternative energy, green energy, and clean energy.

It is within this context of an urgent need to reconcile the damage that has resulted from exploitation – both of resources of the planet, and of the relationships between Indigenous and Settler peoples – that Indigenous and Settler peoples are beginning to view energy efficiency, conservation, and renewable energy development as a potential path towards necessary reconciliation (Henderson 2013; Jaffar 2015; Krupa 2012a). However, without an understanding of the state of these projects and partnerships to-date, assuming that renewable energy initiatives in and by Indigenous communities will automatically lead to improved Indigenous-Settler relations may be worrisome – especially when we consider the history of exploitation in other resource and energy sectors (Maclean et al. 2015; McLeod et al. 2015). Indeed, it is important to note that the potential exists whereby energy initiatives can perpetuate the colonial structures of exploitation (Bombay et al. 2014; Finley-Brook & Thomas 2011). This makes the evaluation of the processes whereby these initiatives occur essential³. As researchers in this arena, we are approaching the topic with cautious optimism while acknowledging the potential for exploitive relationships. This analysis is not an attempt to overshadow or minimize the voices of Indigenous peoples in this area, nor are we attempting to provide an all-encompassing solution to be imposed on Indigenous peoples.

In Canada, renewable energy is providing an increasingly greater share of electricity across the country (Natural Resources Canada 2016). With established hydro power and the recent growth of wind and solar energy, 65% of Canada's electricity generation is now from renewable sources (National Energy Board 2017). While this may seem like a promising development for many Canadians (especially in urban centres), it does not consider the social and environmental

124 problems that can be created by certain *types* of renewable energy developments – especially
125 large-scale hydro (Ansar et al. 2014; Cizek 2004). The flooding of Indigenous territory and the
126 blatant disregard for treaty rights have indeed fueled contemporary examples of local objection
127 to hydro projects such as Muskrat Falls in Labrador and Site C in British Columbia (Omand
128 2017). Additionally, at a time when renewables are increasing, this clean energy rarely reaches
129 and/or benefits remote, off-grid communities in Canada (Weis & Ilinca 2010) – most of which
130 are Indigenous. Recent data from the Pembina Institute estimates that of the approximately 300
131 remote Indigenous communities in Canada, nearly 250 (83%) are entirely reliant on their own
132 micro-generation of electricity (Lovekin 2017). These micro-grids are frequently supplied by
133 diesel generators that degrade fragile environments, and are often costly, unreliable and insecure
134 sources of power for remote communities that must transport fuel and equipment via semi-
135 permanent infrastructure (Arriaga et al., 2013; Weis et al. 2008). Such communities that are
136 moving forward with renewable energy technologies have been said to be supported by flexible
137 regulatory and fiscal policies and driven by a desire for active participation (Karanasios & Parker
138 2018).

139 Indigenous communities are aware that diesel power generation is not sustainable (Karanasios
140 & Parker 2016a), and as the high initial capital required for installation and operation continue to
141 become more affordable, many communities are exploring opportunities to transition to
142 renewable sources of energy that can sufficiently fulfill their energy needs, increase sovereignty,
143 and/or be sold to larger energy grids to generate sustainable incomes (Henderson 2013). In
144 advancing alternative energy futures, and potentially contributing to the reconciling of
145 relationships between Indigenous peoples and Settler Canadians, Canada is in a unique position
146 to model energy initiatives on a commitment to upholding Indigenous rights, environmental

sustainability, and economic prosperity, while maintaining free, prior and informed consent⁴.

Indeed, such development has been described in an encompassing sense by the TRC through the

92nd Call to Action, which encourages corporations to:

- 1) Commit to meaningful consultation, building respectful relationships, and obtaining the free, prior, and informed consent of Indigenous peoples before proceeding with economic development projects; [and]
- 2) Ensure that Aboriginal peoples have equitable access to jobs, training, and education opportunities in the corporate sector, and that Aboriginal communities gain long-term sustainable benefits from economic development projects (Truth and Reconciliation Commission of Canada 2015b).

Moreover, the 43rd and 44th Calls to Action call for the adoption and implementation of the

United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and Private

Member's Bill C-262: "An Act to ensure that the laws of Canada are in harmony with the United

Nations Declaration on the Rights of Indigenous Peoples" has recently (Feb. 7, 2018) passed the

2nd reading in Canada's House of Commons. Given that the UNDRIP provides robust support for

Indigenous peoples' autonomy regarding resource development, as well as for free, prior, and

informed consent, it is becoming increasingly apparent that the needs and rights of Indigenous

⁴ Free, prior, and informed consent (FPIC), as detailed in the United Nations Declaration of the Rights of Indigenous Peoples, "allows [Indigenous peoples] to give or withhold consent to a project that may affect them or their territories. Once they have given their consent, they can withdraw it at any stage. Furthermore, FPIC enables them to negotiate the conditions under which the project will be designed, implemented, monitored and evaluated" (United Nations, n.d., p.13).

peoples can no longer be ignored or side-stepped. For the renewable energy industry, taking up the TRC Calls and demonstrating a commitment to Indigenous peoples' rights as expressed in the UNDRIP would help ensure that renewable energy initiatives contribute to reconciliation while helping to secure a clean energy future.

In what follows, we present research that examines these energy transitions through an analysis of the literature that has been produced to-date regarding the role of autonomy and reconciliation as factors in renewable energy initiatives involving Indigenous communities in Canada. In the absence of any existing systematic review, this paper is the first to fully examine ongoing and completed research in Indigenous communities regarding the transition towards more sustainable energy futures (including conservation, efficiency, and renewable energy developments), the associated motivations and outcomes for doing so, and the apparent impact on/of autonomy, reconciliation, and healing. Our aim was to better understand the current state of affairs between Indigenous peoples and energy stakeholders, who may be supporting autonomy, reconciliation, and/or healing through renewable energy, or to unveil the structures and processes that are perpetuating a "business as usual" model that is framed in environmental dispossession and the colonial encounter (Tobias & Richmond 2014). Considering this, we posit that renewable energy initiatives, when aligned with the UNDRIP and TRC mandates, may help support reconciliation and healing efforts in Canada and abroad, not only within a development context but within all contexts of Indigenous-Settler collaboration.

In part, our review attempts to address a void in our understanding of energy initiatives in Indigenous communities through a critical lens. There are some indications from non-Indigenous communities in Canada and elsewhere that renewable energy development processes can lead to strong local opposition and new kinds of environmental injustice (McRobert et al. 2016; Ottinger

et al. 2014). This is seen even under ‘romanticized’ participatory and community-based development models where there should be higher levels of distributive fairness, and local decision-making ability (Simcock 2016; see also Walker & Baxter 2017a; Walker & Baxter 2017b). That is, the fact that renewable energy and ‘equity-centred’ policy does not *always* lead to optimal outcomes for local communities playing host to these projects should give us pause going forward – especially if these same trends extend to Indigenous territories. Thus it is essential that research, like the study presented here, be completed before this kind of positive rhetoric of renewable energy involving Indigenous communities builds enough momentum that we become blind to possible shortcomings in process or outcome.

Approach

The systematic review research method, said to be effective in synthesizing primary research findings, was chosen for this study (Dixon-Woods et al. 2006), and is used most often in health research where pooled findings from clinical trials are used to inform healthcare providers on best practices for evidence-based decision making (Higgins & Green 2011; Petrosino et al. 2001). While many of these systematic reviews are based on quantitative measures such as Randomized Controlled Trials (Dixon-Woods et al. 2006), researchers are increasingly using the systematic review method across the social sciences to synthesize published research, including observational and qualitative methodologies and generate detailed, evidence-based understandings on a wide variety of research topics and policy questions (Ford et al. 2011; Miller 2005; Petrusek MacDonald et al. 2013; Stefanelli et al. 2017).

Our systematic review was conducted per the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (Moher et al. 2009). The three objectives that comprise the purpose of our paper are: i) to examine the ongoing or completed

210 research involving Indigenous communities in Canada regarding the participation (or not) in
211 renewable energy initiatives; ii) to begin to understand the associated motivations and outcomes
212 for doing so and; iii) to identify the real or perceived impact on autonomy, reconciliation, and
213 healing in their various forms.

214 With the assistance of a research librarian at Queen's University, our research team scoured the
215 academic literature related to Indigenous leadership and participation in Canada within the
216 renewable energy sector. In both English and French, we searched through three highly regarded
217 academic databases, *Pro Quest* and *Google Scholar* (both of which scan hundreds of academic
218 databases), and *Pub-Med* (a health-specific database) using various keyword strings, as well as
219 two thesis databases (*Library and Archives Canada Thesis Portal*, and *ProQuest Global*
220 *Dissertation and Thesis Database*), and one Google search. Google was chosen to ensure
221 relevant grey literature were included in the review and involved examining the first 50 search
222 results, to the point in which search results were no longer relevant (see Tables 1, 2 – Keyword
223 Strings). Grey literature includes written reports that have not been formally published, have
224 limited distribution and are not available through conventional academic channels (Auger 1998).
225 Such pieces are not typically included as an integral component of systematic reviews in the
226 health sciences, though are integral in social science reviews (Hopewell et al. 2005). In our
227 review, grey literature was included to also give space for Indigenous voices through channels
228 beyond peer-reviewed journal articles, as Indigenous research is often conducted at a
229 community/organizational level and outputs do not always appear in traditional academic
230 channels. Our initial literature search spanned those records published after 1980; however,
231 likely due the fact that renewable energy is relatively new to the energy landscape, the records
232 included in the final full-text review stage were published only between January 2006 and June

2017. Our final dataset was made up of peer-reviewed and non-peer-reviewed articles, as well as theses and dissertations, books, and online publications. Because our intent was to look for and examine the breadth of Canadian literature in this area, we conducted searches through both of Canada's two official languages, French and English. However, no relevant publications were found in French.

<Insert Tables 1 and 2 – Keyword Strings Approximately Here>

Using the search strings found in Tables 1 and 2, academic and grey literature databases were searched in October 2016 and again in June 2017. In efforts to organize the literature, references were exported to the reference managing software *Mendeley*. We used the web-based systematic review program *DistillerSR* to review the initial list of references and determine our final dataset of included articles. Using the *DistillerSR* software, all duplicate references were identified and removed from the database. Based on our defined inclusion criteria, four levels of 'forms' – inclusion and exclusion criteria for sorting data – were created and were used to screen the titles and abstracts of included literature to determine relevance to our study (see Table 3 – Exclusion Criteria). These forms were pilot-tested before reviewing all included records. Literature that was included in our final dataset, as well as the literature whose eligibility could not be determined through a title and abstract review, were subjected to a full-text review.

<Insert Table 3 – Exclusion Criteria Approximately Here>

During the full-text review, data were first abstracted for literature classification (author(s), article title, date of publication, literature type, ownership model of development); characteristics of the study (geographic location, renewable energy discussed – type and perspective); and study outcomes (research purpose, discussion of autonomy, community motivations, important conclusions drawn, limitations of study and development, and key recommendations). We then

analyzed the collected data to generate a detailed understanding of renewable energy initiatives in Indigenous territories.

Next, data were abstracted from the eligible records by the team using a codebook of general and specific questions (see Table 4 – Codebook for Full-Text Review) that were pilot-tested on the first five records. This was done to ensure that our codebook would allow for the abstraction of important data from all included records. As no changes to the form were needed, the remaining eligible records were subjected to review through both *DistillerSR* and the external tracking of results within *Microsoft Excel*. This stage also served as the final screening process for included literature, where upon a full review, ineligible literature was eliminated from our study.

<Insert Table 4 – Codebook for Full Text Review Approximately Here>

Findings

The strategy used to search for literature yielded 980 initial records from our academic, grey, and thesis databases. Duplicate records (n=24) were then removed and the titles and abstracts from the remaining 956 records were screened for relevance using the four exclusionary forms within *DistillerSR*. Records were excluded if they did not: focus on renewable energy, focus on Indigenous peoples, or discuss Indigenous autonomy. They were also excluded if they were deemed unrelated to our research after full review (see Table 3 – Exclusion Criteria). The first form excluded 542 records that did not focus on renewable energy. The second form excluded 70 records that did not discuss Indigenous peoples or Indigenous communities. The third form eliminated 201 records that did not discuss Indigenous autonomy (and synonyms), reconciliation, or community values. The final exclusionary form excluded 65 records where it was apparent from the title that the research was not relevant to our study. Thirty-eight more records were removed as they were either inaccessible due to restrictions (n=2), or after a full-text review, did

not meet the inclusion criteria (n=36) (Figure 1 – PRISMA Diagram). The remaining 39 academic, grey, and thesis records, plus 1 book (n=40) were then subjected to our reporting tool where data were abstracted. At this stage, it was deemed that 7 more records did not meet the inclusion criteria for our research and were removed, while another 7 did not discuss Canada in the context of the article. Therefore, our final dataset consisted of 26 total records, as illustrated in Figure 1 – PRISMA Diagram.

<Insert Figure 1 PRISMA Diagram Approximately Here>

Literature Classification

Of the 26 included records in this study, almost all (n=22) were written entirely by non-Indigenous peoples. Exceptions include work by a Maori scholar (Bargh, 2010), three sections of Henderson's (2013) book written by Canadian First Nations Leaders⁵, and two co-written theses: Ozog (2012) with T'Sou-ke Nation and Skidegate Band, and Schulz (2017) with/by Alderville First Nation. Schultz (2017) writes that "currently the academic climate is one that favours the recognition of a single author perspective in graduate research, although it is my perspective that this paper shares authorship with Alderville First Nation" (p. 26). Indigenous peoples were research participants (n=5) or partners (n=4) in nine publications (35%), while one other analyzed a First Nation document. As for the format of the final data set, 17 were peer-reviewed articles (65%), 5 were Master's theses (19%), 3 were reports produced by organizations (12%), and 1 was a book authored by a renewable energy consultant (4%). Research in this area is still emerging, as 81% (n=21) were published between 2011-2017, with the largest influx of publications occurring in 2016 (n=11, 42%). Reviewed literature included 16 case studies (62%)

⁵ These three people were: Shaunna Morgan (Crees of the Waskaganish First Nation), Dr. Judith Sayers (Hupacasath First Nation) and Gordon Planes (Chief of T'Sou-ke nation).

and 10 reviews (38%). Of the 16 case studies, 8 articles (50%) discussed a community-based ownership and/or Indigenous leadership model, 6 (38%) discussed a partnership between communities and governments, industries, academia, or NGOs, and 2 (12%) detailed developments that were led entirely by government or industry representatives.

Characteristics of Research Studies

Wind and solar energy were the two most common renewable energy technologies that appeared throughout the review at 7 (27%) and 5 (19%) records, respectively, while energy derived from hydroelectricity and tidal power were discussed in 2 records (8%). Renewable energy as a concept was discussed in 15 records (58%), while a transition away from fossil fuel dependency towards an unspecified renewable energy source was examined in 6 records (23%). Most included records discussed renewable energy as a promising path forward for Indigenous communities (n=18, 69%), while 6 records (23%) presented arguments both for and against renewable energy development, and 2 records (8%) argued entirely against renewable energy development, including in Indigenous territories. These records against renewable energy cited shortcomings in the quest for ‘just sustainability’ (Brady & Monani 2012), and the destruction of ecosystems that results from large-scale hydroelectric dams (Cizek 2004).

Research Outcomes: The Drivers of Renewable Energy Initiatives

Throughout this review, autonomy (and synonyms) was often discussed at length. As an overall goal of renewable energy initiatives, Indigenous peoples cited forms of autonomy – be it within environmental, economic, or socio-political contexts – as a primary driver in motivating a transition towards renewable energy resources (Fields-Lefkovic 2012; Hamilton 2011; Henderson 2013; Jaffar 2015; Karanansios & Parker 2016a, b, c; Ozog 2012; Shelby et al. 2012; Schultz 2017). As described by the authors of these publications, community members sought

energy autonomy and security in order to combat the rising costs of municipal and provincial institutions that supply energy (Krupa 2012a; Ozog 2012; Schultz 2017), and unreliable diesel transportation into rural and remote communities without permanent access routes (Rahman et al. 2016).

Reviewed literature suggested that reconciliation and healing often occur through a balancing of goals related to ecological sustainability and economic prosperity. Brady and Monani (2012) posit that viewing Indigenous peoples through a binary lens of “The Ecological Indian” who is opposed to all development, versus a narrow focus only on economic prosperity and development at any costs is both overly reductionist, and likely impedes the implementation of renewable energy initiatives in Indigenous territories. Coates (2016) provides support for this argument and suggests that partnerships based on meaningful dialogue, shared leadership, and collaboration are more likely to be successful:

“When [Indigenous peoples] are drawn into the [energy] sector as real partners, both in terms of appropriate consultation and active participation, [Indigenous peoples] have been able to strike a balance between protecting local ecosystems, ensuring responsible development on their territories, and creating economic space for their communities in a sector that, until recently, left them on the outside looking in” (Coates 2016, p.4).

Reviewed literature suggests that Indigenous communities are uniquely positioned to benefit from renewable energy through unique tax-exemption structures for income earned in on-reserve communities (Canada Revenue Agency 2018; Krupa, 2012b) and that developing renewable energy resources in Indigenous territories would support autonomy, reconciliation, and healing through the reallocation of funds to support economic development – money that would otherwise have been used to support energy costs associated with fossil fuel dependency (Bargh

2010; Coates 2016; Gardner et al. 2015; Henderson 2013; Krupa et al. 2015; Shelby et al. 2012). Henderson (2013) asserts that if Indigenous communities are to succeed with regard to renewable energy development, the importance of balancing environmental sustainability and health, with realized economic prosperity must not be forgotten. While aspirational goals of socio-cultural autonomy are important, Henderson (2013) acknowledges that these are often subjective evaluations, and that community buy-in also requires the realization of tangible benefits in the form of environmental health and financial returns.

In contrast, Rezaei and Dowlatabadia (2016) argue that this economic prosperity–autonomy appearance is reversed. These scholars state that while environmental protections and material self-sufficiency are important outcomes of Indigenous peoples’ engagement in the renewable energy sector, it does not illustrate the initial motivation behind community participation. This motivation, they argue, is one of political self-determination resulting from a desired independence from colonial institutions such as the Department of Crown Indigenous Relations and Northern Affairs, and the Department of Indigenous Services (as discussed in Alfred 2009; Coulthard 2014). This independence would allow Indigenous peoples and leaders to govern themselves and their energy initiatives without interference from the State or industries, and to determine appropriate community priorities moving forward – two key factors in promoting reconciliation through autonomy (Rezaei & Dowlatabadia 2016).

Krupa and colleagues (2015) discuss multi-level governance as an integral component of achieving autonomy through renewable energy development. In particular, the authors argue that fostering trust among all collaborating parties to reach agreeable project decisions is the most important component in moving development proposals forward. This trust, they argue, supports a more unified community vision for their energy future. Without meaningful involvement of

Indigenous leaders and community actors in roles with decision-making power, the likelihood of community dissent and unrealistic expectations for the project – goals that may ultimately not be achieved – increases significantly (Krupa et al. 2015). Further, Krupa (2012a) argues that there is a lack of awareness within the general population, as a whole, regarding the complexities and intricacies involved in small- and large-scale energy systems used to provide power to communities. In considering this, developers with proposed energy projects involving Indigenous communities should offer comprehensive knowledge translation initiatives to better communicate these complexities to Indigenous leaders and community members. This in turn will allow for meaningful dialogue and informed decision-making between collaborators, and for Indigenous peoples to exert sovereignty over developments that affect their community (Krupa 2012a).

Within Henderson's (2013) book, *Aboriginal Power*, Cree woman and renewable energy leader, Shaunna Morgan discusses with the author the factors that, in her experience, can best facilitate renewable energy development in Indigenous communities. According to Morgan, cultivating support and commitment, and making sure development aligns with other community priorities is of utmost importance. Additional literature (e.g., Coates 2016; Rodman 2013) support the notion that community buy-in is generated through continued effort from communities and developers, consultation with experts and those that have previously developed projects and transmission of that knowledge to inform the community, and through the creation of space where conversations can occur between communities, leaders, and developers. Throughout siting and planning, the creation of a clear, detailed plan of where and how exactly energy will be used and conserved, and investments in education about the benefits of renewable energy and energy

391 efficiency will also help to increase the likelihood that initiatives are completed and are a
392 'success' in the local context (Henderson 2013).

393 Bargh (2010), however, cautions against the assumption that the existence of renewable energy
394 projects in Indigenous territories represents high levels of support from Indigenous peoples
395 within the community. Though Indigenous peoples are partnering with industries and developing
396 renewable energy sources as well as conservation and efficiency strategies, this does not equate
397 to uniform levels of support for all renewable energy initiatives across all communities. Rather,
398 Bargh (2010) suggests that instead of viewing total project numbers to calculate support for
399 renewable energy initiatives, levels of community involvement within the project from design
400 through to completion and maintenance (Henderson, 2013; Krupa, 2012a; Krupa et al. 2015), can
401 serve as the better indicator. The argument here then, is that renewable energy development is
402 not an inherently positive action, and if developments proceed without the collective
403 community's free, prior, and informed consent, the potential for failure and the perpetuation of
404 the colonial encounter increases.

405 **Discussion**

406 The collection of records that make up this systematic review illustrates a large and significant
407 influx of publications in 2016. Interestingly, these records are emerging at a time when Prime
408 Minister Justin Trudeau, who campaigned on the premise of building Nation-to-Nation
409 relationships (Liberal Party of Canada 2015), was recently elected. Trudeau also committed to
410 implementing every Call to Action outlined in the TRC (Truth and Reconciliation Commission
411 2015b), and supported the Federal Minister of Indigenous and Northern Affairs, who announced
412 that Canada would fully support the United Nations Declaration of the Rights of Indigenous

413 People, without qualification⁶ (Fontaine 2016). While never explicitly stated as a contributing
414 factor to their studies, the importance of Nation-to-Nation relationships, the principles of
415 reconciliation as outlined in the TRC, and support for the UNDRIP support the notion that
416 Indigenous sovereignty is, and will continue to be a clear priority for Indigenous and Settler
417 peoples in Canada, and for researchers and participants conducting studies in this realm.

418 The 26 papers that made up the final data set were mostly (n=22) written by non-Indigenous
419 peoples. This pattern is seen across the broader literature of Indigenous studies (Castleden et al.,
420 2010; Kovach 2009; Richmond et al. 2013) and supports growing assertion for Indigenous
421 perspectives to be more prevalent within academic and grey literature. There was also a serious
422 lack of meaningful partnerships between these mostly non-Indigenous authors and local
423 communities. Only nine papers identified Indigenous peoples as partners or that that they had
424 ‘teamed up’ with community to help shape all stages of the research – including question
425 formation. Without the implementation of Indigenous viewpoints and possibilities for authorship,
426 we risk losing sight of the issues most important to local communities and thus may practice a
427 type of academic imperialism whereby research results are not meeting the needs of community
428 (Koster et al. 2012; Sylvestre et al. 2017). This ultimately perpetuates the negative associations
429 that many Indigenous communities have towards the research enterprise, calling into the
430 question the value of participating in research that may offer no benefit to them. To help address

⁶ UNDRIP was officially announced in 2007, though Canada was one of four nations that did not agree to sign on to the terms. In 2010, Canada formally signed the UNDRIP document, though it was not until 2016 that Canada agreed to meet each of the terms without qualification. Further, at the time of writing, Private Member’s Bill C-262: “An Act to ensure that the laws of Canada are in harmony with the United Nations Declaration on the Rights of Indigenous Peoples” has passed the 2nd Reading in the House of Commons.

431 these problems and encourage meaningful collaboration between Settler and Indigenous peoples,
432 we can look to exemplars from this study including Shultz (2017). She states her Master's thesis
433 shares authorship with Alderville First Nation but due to regulations at Royal Roads, was unable
434 to officially list the community as a co-author. These kinds of institutional barriers permeate
435 academic environments and are but one example of the continued policies of exclusion that
436 Indigenous peoples and Settler allies continue to work to redress.

437 Our study sought to address several research questions pertaining to the narrative around
438 renewable energy initiatives in Indigenous territories, with the analysis focused on the use of
439 renewable energy as a vessel for self-determination, health, and autonomy (Alfred 2009;
440 Coulthard 2014) as its central themes. In listening to our Indigenous community partners, our
441 assumptions at the outset of the research was that self-determination and autonomy were the
442 primary motivating factors that stimulated the development of renewable energy in Indigenous
443 territories, however the literature provided conflicting accounts of community motivation. Some
444 of the reviewed literature noted that striving for autonomy was the motivating factor that
445 stimulated community interest in renewable energy initiatives, and that economic prosperity
446 (among other benefits) was an ancillary outcome of that decision (e.g., Rezaei & Dowlatabadia
447 2016). This conflicted with scholars who argued that economic prosperity and social
448 development were the initial and primary motivating factors, while achieving levels of autonomy
449 and self-governance were accompanying benefits (e.g., Henderson 2013). While the literature
450 differed regarding motivations and outcomes, these findings are consistent with community-
451 based research literature (e.g., Simcock 2016; Walker & Baxter 2017b) in that it provides
452 support for the notion that researchers are unable to identify a singular motivation (in this case
453 for energy initiatives) that is generalizable to Indigenous communities across Canada. This

discrepancy represents an inconsistency in the literature and our way of understanding the provenance of these projects. It could be the case that motivations are different based on the type of technology introduced and/or the community social dynamics where renewable energy initiatives are proposed. To help disentangle these complexities, and to address the general lack of existing studies to-date, more inquiry, including community-based studies with and led by Indigenous peoples, is needed to explore the dynamics within Indigenous communities throughout the process of implementing (or choosing not to implement) renewable energy initiatives.

In cases where autonomy was suggested to be the stimulus for renewable energy development, scholars discussed a desire within Indigenous communities to achieve independence from colonial institutions, and to exert rights to self-governance and self-determination over the actions on, and quality of, Indigenous lands (Fields-Leftkovic 2012; Rodman 2013). After generations of environmental degradation, broken promises, and one-sided partnerships, calls for self-governance over Indigenous territories are justified and indeed, much needed. While the history and ongoing colonial implications in communities help frame the discourse surrounding renewable energy initiatives, current literature suggests that it is planning for a more sustainable future that is the driving stimulus in these communities (Coates 2016; Krupa et al. 2015; Rezaei & Dowlatabadia 2016). Such forward-thinking efforts at attaining energy security and improving environmental conditions is consistent with literature discussing the Seven Generations Teaching, common in many Indigenous communities across North America, that encourages decision-makers to consider the impact of their actions seven generations into the future (Lavallee & Poole 2010).

476 While still discussing the importance of autonomy and forward-thinking, authors such as
477 Henderson (2013) and Kronk (2010) note that these factors are long-term, value-based and
478 subject to interpretation. They argue that rousing the necessary community support to create a
479 sustainable energy future requires that tangible (e.g., financial, environmental) benefits also be
480 realized in the short-term. It is here that the authors suggest that reducing energy costs at home
481 along with noticeable site remediation, balanced with economic development and environmental
482 protection priorities presents more immediate benefits to communities (Henderson 2013; Kronk
483 2010). They believe that this, in turn, serves as the primary motivation for the continued support
484 for the development of renewable energy projects in many Indigenous communities. This finding
485 is congruent with the work of others who have studied wind energy development in non-
486 Indigenous communities and found that community-identified, *appropriate* local benefits are
487 associated with higher levels of support (Bronfman et al. 2012; Toke et al. 2008; Walker &
488 Baxter 2017a).

489 It is important to note that not all cases appearing in this review explicitly discussed renewable
490 energy in the context of energy security, environmental protection, or self-governance
491 motivations. The case of Biigtigong Nishnaabeg Ojibways of the Pic River (Krupa 2012a) serves
492 as an outlier in the literature when considering the motivations behind their renewable energy
493 initiative, as the project was neither motivated by alleviating the strain of a colonial government,
494 nor the financial strain from a fossil fuel-powered microgrid. In this case, Krupa (2012a)
495 discussed the construction of a small-scale run-of-river hydro project as one of many cost-saving
496 initiatives used by the community to channel funds to support other community development
497 endeavours deemed crucial by members of the community – including education, substance
498 abuse programs, youth mentorship and job training – all intended to improve quality of life

metrics in the community. This kind of strategy implies – and rightly so – that Indigenous communities such as Biigtigong Nishnaabeg Ojibways of the Pic River may be going forward with renewable energy initiatives not only to create or generate new sources of income, but also, and perhaps more importantly, to help with insufficient funding for important social services within the community (Casillas & Kammen 2010; Flavin & Aeck 2010). Thus, development within this context may help with the disproportionate gaps of socioeconomic status and health between Indigenous compared with non-Indigenous peoples of Canada and elsewhere (Adelson 2005; Mitrou et al. 2014).

To successfully design, implement, and maintain a renewable energy program, authors stressed the need to ensure widespread community support for the project (Bargh 2010; Henderson 2013). In addition to the tenets of community-based participatory research, which include co-learning, shared decision-making, and the co-creation of mutually beneficial knowledge, scholars highlight education and transparency in partnerships as crucial to project success (Coates 2016; Gardner et al. 2015). Gardner and colleagues (2015) posit that proposed renewable energy programs are often not fully explained to communities during the development process, and therefore benefits are often overestimated by community members, while the necessary start-up capital is underestimated. In considering this, these scholars, among others, support further knowledge-sharing opportunities between community members and industry partners and/or governments to ensure that all parties fully understand project details and, as a result, create higher levels of community support for the development (Gardner et al. 2015; Ozog 2012). At the same time, industry partners and others must engage in respectful dialogue and not treat local Indigenous peoples as being ill-informed in this realm – as has been the case in Europe and parts of North America with longer histories of renewable energy development (Burningham et al.

2015; Devine-Wright 2014; Walker et al. 2014). This idea that planning and siting processes need to be fair and accessible also has some relevance to the concept of procedural justice, which has been used to help explain local support for renewable energy projects in non-Indigenous communities in the developed world (e.g. Gross 2007; McRobert et al. 2016; Ottinger et al. 2014; Walker & Baxter 2017a). The takeaway from many of these studies is that while participation, collaboration, and engagement during the planning stages are important in terms of shaping local approval, local control is paramount throughout. In the context of Indigenous communities and the concepts of energy sovereignty and autonomy, this idea may be an essential pillar of local support and should be investigated in future work.

Conclusion

Renewable energy initiatives in Indigenous territories occur for a multitude of reasons, and as this review has shown, motivations can vary on a case-by-case basis. While some communities express a desire to attain new levels of autonomy and self-determination through developing a renewable energy plan for a secure energy future to help redress the historical injustices associated with forcible dispossession of land and the erosion of cultural, social, physical, and mental health (Alfred, 2009; Bombay et al., 2014), others cited their motivations in the realm of reducing environmental damage and energy costs, and/or diverting those funds to additional community-development initiatives. These results support the sovereignty and the local decision-making processes of each Indigenous nation.

Indigenous peoples, many of whom are intricately connected to their traditional territories, are championing efforts in renewable energy efficiency, conservation, and development in Canada. As energy attitudes shift and the desire for renewable energy expands in Indigenous communities, Canada is uniquely positioned to develop an energy future that provides security,

environmental protection, and economic prosperity – all while contributing to efforts at Nation-to-Nation relationship building and reconciliation as outlined by the TRC. The development of meaningful partnerships predicated on respect and free, prior, and informed consent is crucial to achieving a secured energy future for Indigenous and Settler Canadians alike.

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793 Figure 1 – PRISMA Diagram

Draft

Keyword String (English)

((“Indigenous People” OR “Aboriginal” OR “First Nation” OR “Inuit” OR “Métis”)

AND

(“Renewable Energy” OR “Alternative Energy” OR “Clean Energy” OR “Green Energy”)

AND

(“Self-Sufficiency” OR “Autonomy” OR “Sovereignty” OR “Self-Governance”)

AND

*(“Solar” OR “Solar Energy”) OR (“Wind” OR “Wind Energy”) OR (“Tidal” OR “Tidal Energy”) OR (“Geothermal” OR “Geothermal Energy”) OR “Run of River” OR (“Biomass” OR “Biomass Energy” OR “Bioenergy”))**

**large-scale hydro was intentionally excluded from this review due to the polarizing nature of it being classified as a “clean” or sustainable energy source (Ansar et al., 2014; Cizek, 2004; Finley-Brook & Thomas, 2011)*

Table 1 - Keyword Strings

<u>Keyword String (French)</u>
<i>((“Indigenes” OR “Aborigene” OR “Premiere Nation” OR “Inuit” OR “Métis”)</i>
AND
<i>(“Energie renouvelable” OR “Energie alternative” OR “Energie propre” OR “Energie verte”)</i> AND
<i>(“Autosuffisance” OR “Autonomie” OR “Souverainete” OR “Auto-gouverance”)</i>
AND
<i>(“Solaire” OR “Energie solaire”) OR (“Vent” OR “Energie eolienne”) OR (“Maree” OR “Energie maremotrice”) OR (“Geothermique” OR “Energie geothermique”) OR “Cours d’eau” OR (“Biomasse” OR “Energie biomasse” OR “Bioenergie”))*</i>

Table 2- Keyword Strings

Draft

<i>Form Level</i>	<i>Screening Questions and Possible Response</i>
1	Does the article discuss renewable energy: Yes – No – Unclear
2	Does the article discuss Indigenous peoples: Yes – No - Unclear
3	Does the article have an abstract: Yes – No (if no, move to full review)
	a) Does the article discuss autonomy (or synonyms): Yes – No
	b) Year of Publication
	c) Country of Study
	d) Renewable Energy: Wind, Water, Earth, Solar, General electricity, General renewable energy, Reducing non-renewable, Not applicable
	e) Ownership Model: Community-led, Partnership, Industry or Researcher-led, Not a case study, Review
	f) Does the article discuss renewable energy in a positive manner: Yes – No — Unclear
4	Should the article be included: Yes – No – Unclear (if Yes or unclear, move to full review)

Table 3 - Exclusion Criteria

Draft

<i>Codebook Category</i>	<i>Questions within Category</i>
<i>Descriptive Data</i>	<div>1) Author(s)' name(s)</div> <div>2) Article title</div> <div>3) Article type (Peer-reviewed, thesis, or report)</div> <div>4) Year of publication</div> <div>5) Countries discussed in study</div> <div>6) Renewable energy discussed</div> <div>7) Development ownership model</div>
<i>Research Design</i>	<div>1) What is the research purpose?</div> <div>2) What are the details of the community involvement in the project?</div> <div>3) What are the limitations of this study?</div>
<i>Research Outcomes</i>	<div>1) How is autonomy discussed?</div> <div>2) What is the community's motivation to participate in this research and/or development project?</div> <div>3) What are the benefits (stated and/or realized) for the community?</div> <div>4) What are the key findings from this research?</div> <div>5) What are the author recommendations from this research?</div>

Table 4 - Codebook for Full-Text Review

Figure 1 – PRISMA Diagram **Figure 1 - PRISMA Diagram**