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Public Health Ethics, Legitimacy, and the Challenges of Industrial Wind Turbines: The Case of Ontario, Canada

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Abstract

While industrial wind turbines (IWTs) clearly raise issues concerning threats to the health of a few in contrast to claimed health benefits to many, the trade-off has not been fully considered in a public health framework. This article reviews public health ethics justifications for the licensing and installation of IWTs. It concludes that the current methods used by government to evaluate licensing applications for IWTs do not meet most public health ethical criteria. Furthermore, these methods are contrary to widely held fundamental principles of administrative law and governmental legitimacy. A set of decision-making principles are suggested to address this situation that are derived from existing and emerging legal principles in Canada and elsewhere. These include the Precautionary Principle, the Least Impactful Means (Proportionality) Test, and the Neighbor Principle.

Keywords

public health ethics, wind turbines, legitimacy of government, licensing, decision rules

Introduction

The rationale for governmental support of industrial wind turbines (IWTs) as a viable form of alternate energy production emphasizes their “green” qualities. These qualities are said to include public health benefits because IWTs are claimed to produce less pollution than conventional energy sources. Consequently, we are told to expect less disease burden on the general public from IWTs than from fossil sources.

This assertion has been challenged in articles appearing in this issue (e.g., Bryce). Therefore, to this extent, the public health rationale itself must be reexamined.

But even if the net population health impact of IWTs were to be as claimed by their advocates and proponents, there is still a major problem with the rationale. This problem is only exacerbated by lack of data to support the green claim.

The problem is that even if the pollution-related public health *benefits* were established, there are also clear public health *risks* associated with IWTs. These risks accrue to a subpopulation of our society that suffers a range of negative health effects from IWTs, as documented in this issue.

The fact that such risks exist at all summons up a need for a risk-benefit analysis, which leads us into the deep waters of arguments predicated on utilitarian and contractarian principles.

The pursuit of these ideas leads us even further into a more fundamental debate on the nature and role of consent to

governmental actions. Inevitably, this is the threshold to the very essence of political legitimacy.

In this article, the discourse of public health ethics will be used to parse arguments for and against IWTs in the broader context of governmental legitimacy.

A derived ethical/legal framework is proposed to help inform decision-making processes in governmental and commercial-industrial environments concerning the licensing and installation of IWTs.

Public Health Ethics

While some accounts of public health ethics see the mandate of public health as the maximization of welfare, other just as cogent accounts see it as an aspect of, or means of, producing social justice (Powers & Faden, 2006).

Both accounts, however, involve providing answers to the question: For whom is public health good?

This question assumes greater significance once it is acknowledged that many public health initiatives involve gains to some at the expense of losses to others in a context of

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governmental action backed up by the reality or threat of coercion. Familiar examples include the regulation of smoking, the required use of seat belts and helmets, immunization, and quarantine.

Sometimes, as in the case of wind turbines, the trade-off can be seen as one between asserted population health gains (e.g., net reductions in cases of fossil fuel induced respiratory and lung diseases) and negative impacts on the health of some individuals in specific communities (e.g., sleep loss induced states of anxiety, depression, headaches, extreme fatigue, diminished ability to concentrate, nausea, and other physiological effects including, albeit rarely, vibro-acoustic disease).

The descending gradient between impact on population health and individual health can be in some ways characterized as one of moral ascension: Some might argue that it is more obvious and heinous to expose a few to known immediate hazards in the service of the many who are presumed to benefit in the future from broadly applied social policies such as the proliferation of IWTs.

This type of trade-off, whether consciously or unconsciously applied, raises concerns about social justice and the fair distribution of benefits and burdens. But it has also been said that the conflation of public health with social justice blurs boundaries to such an extent that it ceases to have legitimacy as a definable discipline. As Faden and Shebaya (2010) state,

One worry raised by this interconnectedness across spheres of social life and policy is that classifying something as a public health matter could be an effective way of taking it out of the realm of legitimate discussion. If the goal of protecting health is seen as clearly good, government actions aimed at securing health may be less scrutinized than actions aimed at more controversial ends, leaving public health officials with too much power and too little democratic accountability. . . . Public health ethics has to give serious consideration to the question: how exactly should the mandate of public health authorities be specified such that they do not run afoul of the requirements of legitimacy in a democratic political system? (p. 7)

This statement, however, raises a further issue to which it will be necessary to return in this article more than once. That is, although IWTs present public health issues, they are not regulated by public health agencies. Consequently, the concern raised by Faden and Shebaya (2010), while poignant in its own right, becomes even more worrying when the very protectors of public health are not even allowed into any kind of official debate about the impact of IWTs.

The following is an account of the ethical justifications typically used in connection with public health measures. Faden and Shebaya (2010) are drawn on for the organization

of this section and for the basic outline of justifications used in public health ethics.

It is important to note that the need for justification arises often not from across the board concerns that public health measures may be illegitimate in some way so much as from a more particular concern that certain measures affect some members of society in adverse ways or that they benefit some at the expense of others.

Note too that the justifications outlined below are by no means sorted or capable of being sorted into wholly discrete categories, the boundaries of one sometimes blending into another.

Overall Benefit (Beneficence)

The argument is that public health is a good by definition, because most people benefit from it in one area or another. This is a net social gain type of argument.

The net gain argument is bolstered in modern economics by statistical models that seek to demonstrate population health benefits on an aggregated basis. These models often embed moral assumptions that are not always apparent under the guise of supposedly objective cost utility analyses. For example, the health of the elderly may be discounted as less valuable than the health of the young; the rights of those with “poor” health habits may be devalued in contrast to those who attend (and can afford to attend) health clubs and gyms and shop at high-end food stores (see, e.g., Brock, 2002; Gafni, 1991; Powers & Faden, 2006). And lurking in the shadows of cost utility analyses in the public health arena is the ever present specter of eugenics.

As Faden and Shebaya (2010) state,

There is the risk that the findings emerging from these formal analyses will have determinative influence in policy circles. This risk is augmented by the increasing interest in attempting to empiricize moral considerations by measuring and aggregating the value preferences of the public about moral tradeoffs such as prioritizing by age or life-saving potential (Baker et al., 2008; Menzel et al., 1999; Nord, 1999). These aggregated preferences are then transformed into weights intended to incorporate moral values directly into the structure of the formal methodology, a move that is open to criticism on methodological as well as substantive grounds. (p. 17)

Applied to IWTs one can appreciate that green ideology could be “empiricized” to the point at which it trumps all other values in the development of wind energy policy.

Collective Efficiency

The argument is that in a complex society threatened by so many health risks from so many sources it is efficient for a

central agency (public health) to oversee and regulate these risks because agencies organized according to specific issues could not hope to achieve the same level of proficiency.

While there is an intuitive appeal to this sort of argument, it fails to acknowledge the reality that public health concerns are often embedded in policies and practices that fall outside the sphere of public health agencies. IWTs are a leading example of this type of governmental dissonance. As noted above, the regulation of IWTs does not at present fall within an official public health remit in spite of the numerous and compelling claims advanced by various researchers in this issue.

Harm Prevention

The argument is that restriction or curtailment of the rights of a few can be justified only by prevention of harm to the many (Mill, 1869/1998).

This argument has been used in various public health and safety contexts but usually the contrast is between incursions on individual liberty (as in the case of compulsory seat belt or helmet use and no smoking in public places rules) and collective health benefits. In the case of IWTs, the contrast as noted already is between health benefits to the many versus health risks to a few, a situation to which the Harm Principle may not be best suited, although it must be said that advocates' claims for IWTs go beyond collective health benefits to embrace other putative social goods. These include increased freedom from reliance on nonrenewable energy sources. Insofar then as the contrast is between sacrificing the health of a few in the service of an anticipated bright energy future for the many, perhaps the Mills formulation is more useful. In this context, the prevention of harm to the many becomes a projected scenario in which the majority is "not harmed" by the perpetual threat that oil, gas, and even coal may run out or become inaccessible to us. Certainly, the trade-off is between a clear and evident loss to a few and the unknown, even vague probability of benefit to the many.

Paternalism

The argument is that government can interfere with the liberty or other rights of a few because it is ultimately in their best interests and certainly in the interests of the majority.

In the case of IWTs, the strong paternalistic case is made implicitly and sometimes explicitly that opponents are stupid, stubborn, or both because they do not know what is best for them in the long run. Their stupidity therefore disqualifies them from any further participation in the determination of their own fate.

A softer "libertarian" version of paternalism requires that until people are led to understand the benefits of the measures to which they are about to be unwillingly exposed they should not be subjected to them. Some argue that this is not paternalism at all but rather a form of participatory

governance consistent with grassroots democracy. In any event, in this version people who did not accept that IWTs were likely to be a net benefit to them would not be obliged to consent to have them installed within a range accepted by the more prudential scientific community as likely to cause harm to their health.

Fairness

The argument is that in a democratic society we expect a relatively even social distribution of burdens when these are imposed and directed by government. Unequal distribution is unfair and therefore requires specific justification. In the case of IWTs, this justification might take the path of suggesting that all of us ultimately benefit from green energy in reduced pollution and eventually in freedom from reliance on nonrenewable fossil fuel sources. Consequently, harm to a few is justified by good for the many, which may even include the few who suffer in the short run but reap benefits in the end.

A particular problem arises in this context involving the disproportionate impact of certain public health measures on already disadvantaged groups. In the case of IWTs, this refers to those home and business owners who are economically disadvantaged to the extent that they do not have the option to sell and move from the location in which they are being harmed or expect to be harmed by the careless introduction of wind energy generators.

Again as Faden and Shebaya (2010) state,

There is broad agreement that a commitment to improving the health of those who are systematically disadvantaged is as constitutive of public health as is the commitment to promote health generally (Institute of Medicine, Committee for the Study of the Future of Public Health, 1988; Nuffield Council on Bioethics, 2007; Powers & Faden, 2006, Thomas, Sage, Dillenberg, & Guillory, 2002). (p. 14)

Faden and Shebaya (2010) continue,

When the burdens of a policy fall heavily on those who are already disadvantaged, the justificatory hurdle is particularly high. This concern is at the heart of many environmental justice controversies such as the locating of hazardous waste facilities and hazardous industries in low income communities and countries. (p. 16)

In other words, it is contradictory to the essence of public health ethics, at least insofar as it is grounded in fairness, to further disadvantage the already disadvantaged.

As we explore the further reaches of legitimacy in the next section of this article, fairness will be seen to take on an even more important role.

The Broader Canvas: Political Legitimacy, Social Justice, and IWTs

As noted earlier, public health ethics discourse as applied to IWTs is antecedent to a further-reaching discussion of political legitimacy. This connection is of vital importance in the case of IWTs because, as observed already, the regulation of IWTs does not fall within the public health remit but rather resides in other administrative bodies. Consequently, public health bodies have no direct control over the ways in which IWT installations are approved or sited. This dissociation of powers is in itself problematic and should be a matter of concern to all who govern in the name of the people. However, the issue of the public health impact of IWTs arises not only in the specific arena of institutional public health but also in the arena of political legitimacy generally.

Two fundamental questions of political legitimacy are the following: What gives government the right to govern in a democratic society in the first place? What gives it the ongoing right to coerce compliance with its laws and regulations?

These sound like simple if not simplistic questions but they have consistently eluded answers to which all can agree ever since people began to ask them.

Indeed, it is well to consider the context in which these questions were first asked in any really public and secular context, which was during the 17th century. Prior to that, natural law and divine right had been the source of the dominant accounts of political legitimacy and authority.

Early accounts of alternate sources of legitimacy concentrated on the nature of consent as the basis of political authority. Locke's treatise on the social contract is perhaps the best known of these accounts but there are many others that either elaborate on his thesis or challenge it (Peter, 2010). Essentially, however, Locke's account is based on not only "originating consent" (how government first got its mandate from the people) but on a form of ongoing majoritarianism. As Locke (1690/1990) wrote,

Every man, by consenting with others to make one body politic under one government, puts himself under an obligation to every one of that society to submit to the determination of the majority, and to be concluded by it; or else this original compact, whereby he with others incorporates into one society, would signify nothing, and be no compact if he be left free and under no other ties than he was in before in the state of nature. (Locke, 1690/1990, p. 52f)

Modern descendants of earlier theories of consent now considered to be overly simplistic focus on notions of public reason and/or democratic approval drawing on the works of Kant and Rousseau, respectively (Peter, 2010).

One of the leading embodiments of these derived accounts is the seminal work of John Rawls (2001; see also Rawls, 1971),

who grounds his theory of justice and legitimacy in fairness as a normative social practice.

This writer subscribes to Rawls's theory and declares his bias in this matter.

Fairness, as Rawls defines it, is to be not only a basis for everyday interactions among citizens but also the basis of interactions between government and citizens.

Fairness, as Rawls sees it, is the requirement to recognize and accommodate up to a standard of reasonableness the legitimate interests, claims, and rights of others.

Shain (2001) further articulates this requirement of fairness as it applies in domestic and institutional situations. Drawing on Trebilcock (1993), he identifies two impediments to the normative application of fairness as defined above: information failure and participation failure. Essentially, failures in these areas represent a failure of active consent, thus bringing full circle the links between fairness, legitimacy, and social justice.

The failure of information and participation are of particular relevance in the context of IWT installations where the alleged perfunctory adherence by government and proponents to regulated requirements for consultation with the public has attracted some harsh criticism.

Information and participation failure is abetted by any system of administrative law in which the principles of natural justice (e.g., let the other party be heard, the rule against bias, and the requirement of reasonableness) have become casualties. So much of what goes on under the auspices of administrative law is hidden from or ignored by the public to the point where the erosion of some of our most basic rights can go unremarked (Harlow, 2006).

So it is with IWTs, the story of which, in many jurisdictions, is representative of much that ails our system of administrative law. Anecdotal and deposition evidence from homeowners, community groups, and even municipalities in Canada and beyond frequently testify to the bankruptcy of the consultative process that should embody the principles of information sharing, transparency, and participation.¹

Active consent to the rules and procedures that govern site location and installation of IWTs must be sought or obtained in a substantive way from those who are most likely to be affected by them, namely, residents in affected areas and the municipalities in which they live.

Fairness as an applied modern version of social contract theory calls for an active process in which all participants to a decision are engaged in ways that do not, without offer of compensation, advantage one party over another and in which there is an imperative to discover, acknowledge, and accommodate up to a standard of reasonableness one another's legitimate interests, claims, and rights.

In such a process, there are no preconceived "trump" values or considerations. For example, regulations under the Green Energy Act in Ontario cannot legitimately (according to a Rawlsian view) simply trump the claims and rights of

subpopulations of citizens to the protection of their own and their families' health or enjoyment of their property based on some preconceived and unconfirmed notion of overall benefit to population health. However, that said, there are modern scholars who propose that there can be certain "preemptive" reasons that would allow governments to trump other considerations and interests if the authority behind the action were considered credible, rational, and legal enough for them to do so (see, e.g., Raz, 1986, 1995, 2006). The credibility of "preemptive" reasons, however, requires a virtually nonnormative Weberian account of legitimacy that is based on tradition, charisma, or some other kind of faith-based belief in the rightness of authority (Weber, 1918/1991; see also Weber, 1964). This is not considered to be mainstream thinking about the legitimacy of governmental action in Western democracies (Peter, 2010).

Various other critiques of consent as the basis of legitimacy see it as wishful thinking (e.g., Wellman, 1996) or as a delusion born of a desire to not acknowledge that many, now legitimate governments were born of violence (e.g., Hume, 1748/1965). Such arguments paved the way for the sorts of pragmatic, utilitarian justifications for public health measures that were scouted in the previous section.

Notwithstanding these objections to consent—in some form at least—as the basis of political authority and legitimacy, beliefs in its importance are probably the most current and widely held in our society today (Peter, 2010). We place a high value on the idea of consent in how we are governed even if in reality it is difficult to invest it with practical meaning. Effectively, consent is at the heart of how we create and honor contractual promises that extend beyond the realm of private transactions to that of state and civic governance. When we depart from the principle of consent, we feel obliged to give some account of how that can be justified, and eventually we return to the basic premise that it is desirable to place consent of the governed at the center of our communal life.

From the foregoing discussion and analysis, this writer proposes that Rawlsian fairness and its implied requirement of active consent emerge as the public health ethical principles most likely to serve the needs of a robust and legitimate democracy.

If that is taken as working assumption, what practical guidelines can be extrapolated from such principles to assist governments in the determination of criteria for approving IWT license applications?

In this regard, three emerging legal doctrines may be drawn on for assistance. These have roots in common law and in international law. They appear to be highly relevant to how we might usefully think about how IWT proposals can be fairly evaluated and judged. One doctrine—the Precautionary Principle—has been applied in an administrative law context in Canada already. The other two—the Neighbor Principle and the Least Impactful Means Test—remain to be fully articulated as such in an administrative law context but their

emerging shape can be nonetheless discerned from recent cases.

These three doctrines are "before the fact" tools in that they are used to prevent harm from occurring in the first place.

A fourth doctrine—the Polluter Pay Principle—is an "after the fact" financial compensation tool that has long legal roots in all common law jurisdictions.

The Precautionary Principle

It was imported into Canadian law via the Supreme Court case of *Spraytech v. Hudson (Town)* [2001] 2 S.C.R. 241 from international law where it was originally approved by Canada in the Bergen Declaration of 1990. Subsequently, this doctrine has been embedded in several pieces of Canadian legislation including the Oceans Act, S.C. 1996, c. 31, Preamble (para. 6); Canadian Environmental Protection Act, 1999, S.C. 1999, c. 33, s. 2(1)(a); Endangered Species Act, S.N.S. 1998, c. 11, ss. 2(1)(h) and 11(1).

It means the following: When scientific evidence concerning the harm potential of a given industrial activity leaves room for doubt, that activity should not be undertaken. Proposed mitigating measures are not an adequate response, because if you do not know the nature or degree of risk you cannot prepare for its eventuation.

Some doubt surrounds the standard of care required by this principle. For example, how much harm could or should be reasonably foreseen if a risk eventuates? How big must the risk be to activate the principle? Currently, this principle is being tested in Ontario's legal and quasi-legal systems as it may be applied to IWT licensing. Such testing is likely to go on for some time. A recurrent issue appears to be the extent to which the Precautionary Principle that may be embedded in governing or parent statutes (such as Environmental Protection Acts) evaporates as delegated legislative vehicles such as regulations and administrative orders are created under its supposed authority.²

The Least Impactful Means Test

Evident from recent decisions of the Ontario Municipal Board, which is an administrative tribunal similar to many others in North America and the United Kingdom, this test means the following: State issuers of licenses should approve only those proposed methods of operation that will have the smallest social and environmental impact in pursuit of legitimate industrial objectives.

The Least Impactful Means Test is generically related to the Proportionality Test, which has currency in many countries including Canada. This test requires a form of ends-means analysis in which the requirement that the government provide justifications for statutes that infringe on protected rights is front and center (Beatty, 2004). In Canada, the Supreme Court case of *R. v. Oakes* [1986] 1 S.C.R. 103 is

usually seen as the source of the proportionality test, which was stated as follows:

First, the measures adopted must be carefully designed to achieve the objective in question. They must not be arbitrary, unfair or based on irrational considerations. In short, they must be rationally connected to the objective. Second, the means, even if rationally connected to the objective in this first sense, should impair “as little as possible” the right or freedom in question. Third, there must be a proportionality between the effects of the measures which are responsible for limiting the Charter right or freedom, and the objective which has been identified as of “sufficient importance.”

As is apparent from the wording above, the test was developed to deal with infringements of the Canadian Charter of Rights and Freedoms by government actions such as law enforcement (as in the Oakes case) and law enactment (in other cases). Beatty (2004) shows convincingly, however, that in a number of countries, proportionality analysis is treated as a general principle of public law, applicable not only to constitutional law but also to administrative and even to international law questions.

However, Beatty is not alone in relating the proportionality test to the integrity of the rule of law. Harlow (2006) makes a similar connection in her consideration of the question whether or to what extent we can observe the emergence of a global administrative law with common principles and values. Central to such considerations is the question of when the State or its agencies can be held to be acting “ultra vires”—that is, beyond its legitimate powers and therefore unconstitutionally.

The marriage between the emerging jurisprudence of administrative tribunals in Ontario and the jurisprudence of the Supreme Court and the international community has not yet taken place. But the courtship is in progress and awaits only the brokerage and determination of creative lawyers to firm up the bond.

The Neighbor Principle

Also evident by deduction from recent Municipal Board decisions,³ this is a common law legal doctrine that until recently applied only to claims of negligence in civil courts.

It means the following: basically, there is a legal duty of care to know enough about your neighbors to avoid doing predictable harm to their legitimate interests. A neighbor in this context is anyone who could be foreseeably affected by your acts or omissions. The standard of care is that of the reasonable person in the same situation.

However, the neighbor principle is now being referred to by implication in environmental cases where the expectation is raised that “reasonable” developers should know what

social and environmental interests of their neighbors are foreseeably affected by their operations.

The relatively new concept of a “social impact zone” in municipal board jurisprudence (see examples of such decisions in Note 3) arguably requires developers to consider the foreseeable impact of their operations in certain defined areas. Ultimately, the Neighbor Principle takes its place within the framework of the Good Planning Test that pulls together all the expert information available to determine the extent to which proponents have discharged their duty to demonstrate no unacceptable or, in some cases, no negative impacts from their proposed operations.

This means that they should be aware of not only the commercial and business interests of neighbors but also of their reasonable social expectations of privacy, freedom from nuisance, and enjoyment of property. These are all “legitimate” interests.

It can be seen that all three aforementioned doctrines are allied to the Rawlsian concept of fairness as the recognition and reasonable accommodation of the legitimate interests claims and rights of others.

Indeed, it is this very concept of fairness that has the potential to unite the three doctrines into a coherent jurisprudence of social and environmental stewardship.

The Polluter Pay Principle

This well-established common law principle is evident from many Canadian cases including the Supreme Court case of *St. Lawrence Cement Inc. v. Barrette* [2008] SCC 64 and *Smith v. Inco* (2010) ONSC 3790 (CanLII). It is also enshrined in various forms of legislation.

It means that when an industrial operator is found to have caused loss to its neighbors it must compensate them for such loss regardless of whether there was negligence or not. This strict liability rule (a feature in many common law jurisdictions) has most recently been applied in a class action suit involving nickel contamination. The impact zone within which such losses will be considered varies from case to case.

Essentially, the polluter pay principle is a generic way of describing a class of private civil remedies that includes nuisance, trespass, and negligence. These are legal tools that are used in most cases after damage has been done except where injunctions and other interlocutory measures are used to stop harmful actions before they begin or while they are in progress. They really represent the failure of prevention.

Conclusion

A public health ethics analysis of how IWTs should be licensed and installed if the health of the few is to be balanced with, traded off or sacrificed for the health of the many, leads to the conclusion that the present methods of proposal evaluation need to be critically reviewed.

The only type of test that present methods would easily pass is “strong paternalism”—the argument that the State knows best. But this justification for public health measures enjoys little support in a free and democratic society.

With regard to the broader issue of governmental legitimacy and IWTs we are confronted with an even more profound problem. State actions that do not enjoy the active consent of the people—particularly of those whose health may be adversely affected by IWTs—are fundamentally suspect.

Administrative law systems that stray from the principles of natural justice held to underlie them are also suspect because such departures are in conflict with the Rule of Law.

Unfortunately, we do not find ourselves in this situation as a result of any one remediable action or default on the part of government but rather as a result of a gradual erosion of our collective capacity to hold government accountable.

IWT licensing procedures in whatever jurisdiction are a bellwether of the fate of democracy itself and therefore should be closely examined against the criteria suggested in this article, and in particular against the criterion of procedural fairness and active consent advocated by Rawls.

Several tools present themselves as proactive means of addressing perceived threats to procedural fairness and active consent: the Precautionary Principle, the Least Impactful Means Test (supported by the more general jurisprudence of the Proportionality Test), and the Neighbor Principle (drawn from the more specific requirements of the Social Impact Zone Test).

Converted into criteria for evaluation of IWT license applications, these principles and tests represent a formidable array of protections against arbitrary governmental action. That said, conversion into practical evaluative tools will require creative thinking and benign intent if we are to emerge with a more robust spine to our system of governance and administrative law.

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Notes

1. See also the Carmen Krogh article in this issue.
2. See, for example, the situation described in *Hannah v. Attorney General for Ontario*, 2011 ONSC 609.
3. Rockfort Quarry Hearing (2010) Ontario Municipal Board (Nov. 12th) PL000643, PL060448 (Campbell); Puslinch (Aikensville) Quarry Hearing (2010) Ontario Municipal Board (Jan. 19th) PL080489 (Jackson).

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Bio

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APPENDIX 2

Acoustic Group Pty. Ltd., Consulting Acoustical and Vibration Engineers.

Review of Draft Wind Farm Guidelines 42.4963.R2.ZSC

14th March 2012

EXECUTIVE SUMMARY

In late 2011 The Acoustic Group performed a [desk-top review of the acoustic documents comprising the acoustic assessment for the Flyers Creek Wind Farm and conducted preliminary sound monitoring at an existing operational wind farm \(the Capital Wind Farm\)](#) which was approved in New South Wales on the basis of similar analyses, guidelines and reports to that provided for the Flyers Creek Wind Farm. The assessment found deficiencies and inadequate information in the acoustic assessment of the Flyers Creek proposal such that the true acoustic impact of the proposed wind farm had not been presented to the community.

In the intervening period a set of Draft Wind Farm Guidelines have been issued by the NSW Department of Planning and Infrastructure (“the Department”) for public comment.

The Acoustic Group was requested by the Flyers Creek Wind Turbine Awareness Group to examine the Draft Wind Farm Guidelines with respect to acoustic issues. As there are no acoustic compliance reports for operational wind farms in NSW in the public domain, The Acoustic Group was also requested to conduct additional testing to assess the Draft Guidelines with respect to practical aspects of their application to operating wind farms.

The Draft Wind Farm Guidelines have identified that they closely follow the existing South Australian Guidelines in relation to the noise criteria. The problem for the broader community in comprehending the Guidelines is that from a noise perspective by definition, the Guidelines must be expressed in technical terms which are not readily understood by the community. The community therefore relies on the preparation by the Department of noise guidelines that set rigorous criteria and assessment procedures as well as a rigorous compliance regime. A reasonable person would expect that such Guidelines would be drawn from and based upon solid data and measurements. *Despite the fact that the Department has had the opportunity to scrutinize data and undertake scientific investigations of operating wind farms for the purpose of the Draft Guidelines, it has not done so.*

The Draft Wind Farm Guidelines set out measurement, assessment and compliance procedures which are likely to be unworkable in practice. This review highlights a number of outstanding issues in relation to noise impacts from wind farms that require the Draft Guidelines to be amended in order to safeguard the acoustic amenity of residents in areas where wind farms are proposed and where there has previously been no such noise source.

It is recommended that the proposed base criteria for wind farms be amended to 30 dB(A) when assessed under the worst case scenario. In particular, it is concluded:

1. There is no material or reference in the Guidelines supporting the use of 40 dB(A) as an acceptable amenity level in rural NSW. Examination of the Department’s compliance review

of the Capital Wind Farm confirms Leq levels when turbines are shut down which are significantly lower than 40dB(A) and which undermine this standard as an acceptable amenity.

2. The Draft Wind Farm Guidelines ignore “Offensive Noise.” In so doing, the Guidelines set criteria which are inconsistent with the EPA’s Industrial Noise Policy. Examination of noise data from the Capital Wind Farm confirms that the current Draft Guidelines will permit noise significantly above background level i.e. offensive noise which is likely to interfere unreasonably with a person’s health, comfort or repose.
3. The base limit for wind farms should be 30 dB(A) when assessed under the worst case scenario. Testing establishes that this limit would be consistent with EPA guidelines for the protection of acoustic amenity in rural areas.
4. The Guidelines are vague and inconsistent in relation to the assessment of and measurement during temperature inversions. This undermines the efficacy of the noise criteria.
5. The use of the A-weighting filter is not sufficient to account for the audibility and annoying characteristics of wind farm noise. This is demonstrated with data obtained from the Capital Wind Farm, Woodlawn Wind Farm and Cullerin Range wind Farm.
6. The guidelines do not specifically require full spectrum noise monitoring inside residential properties. Data obtained demonstrates that such monitoring is essential to reflect noise impact and specific noise characteristics.
7. The Guidelines require more detailed acoustic analysis at the proposal stage to identify the effects of different weather scenarios. These scenarios are typically required for industrial noise assessments and in their absence, proper compliance monitoring is impossible.
8. The measurement procedure in relation to specific noise characteristics describes measurements conducted over a 10 minute period. This does not permit identification of these characteristics which are associated with swish, modulation, discrete tones and low frequency noise. This is demonstrated with analysis of data from operating wind farms. Criteria in relation to amplitude modulation are uncertain.
9. Examination of data demonstrates that compliance monitoring can only be effective with the provision of permanent noise monitoring within the wind farm, recording noise levels, wind speed and direction at receiver locations and recording wind speed and direction at hub height. The Guidelines do not, but should, provide for such permanent noise monitoring supplemented with temporary remote monitoring in real time to deal with complaints.
10. The provision of permanent noise monitoring data together with real time presentation of the wind speed and direction at the hub, the power output and operational status of individual turbines must be provided in the public domain to permit independent compliance testing. There is no provision for this in the Draft Guidelines.
11. Compliance procedures are ineffective. The Guidelines do not provide a clear indication of what triggers non-compliance. The specified effects of non-compliance are vague. There are no provisions requiring a cessation of operations if the wind farm is not compliant.

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