Steel Winds:

A Case Study of a Successful Community – Developer Relationship

A thesis submitted by

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Abstract

In recent years renewable energy has become an important segment of the electricity generation landscape. This growth has come at a cost; many proposed renewable energy generation projects have sparked vociferous protest resulting in development moratoria and legal challenges. This thesis follows the growth and deployment of these technologies, with a special focus on New York. A case study of Steel Winds, in western New York, explores how and why that project managed to avoid many of the mistakes and opposition that resulted in siting failures across the state. By interviewing local stakeholders and policy entrepreneurs and performing a detailed records search, this research finds that the Steel Winds project succeeded due in part to the groundwork laid by groups and individuals seeking to transform Buffalo and Lackawanna, NY, into a 'green' silicon valley. Most of the groundwork was laid years before a wind developer expressed interest in the community.

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Introduction

As a student and local environmental advocate, undertaking this thesis was a natural extension of my interests in both renewable energy and community organization – one that came after seeing first hand the kind of resistance renewable energy projects could entail. Spending the summer of 2014 as a research assistant for a renewable energy consulting firm was illustrative of the problems renewable energy faces. As a writer on an industry newsletter, I spent a large amount of time tracking the fortunes of a variety of different projects across the northeast, which meant almost weekly updates about the state of court cases, local opposition, and ultimately a canceled project or two. It became clear to me that the state of community – developer relationships in these projects was one that was often overlooked in the desire to build.

It was because of these concerns that I decided to look at a project that had been remarkably successful, one that was developed just outside of my hometown of Buffalo, NY. The Steel Winds project, developed by BQ Energy and currently operated by First Wind, was the first utility – scale wind farm I have ever seen, and its presence on the shore of Lake Erie is undeniable. The 14 turbines produce 35 megawatts of electricity, and the project is the largest urban wind farm in North America, if not the world. More importantly, the project was proposed, approved and developed at a period in time when renewable energy projects across the state were encountering fierce resistance – taking the form of local opponents, municipalities and lawsuits. Despite these hurdles, BQ's first, large

scale project is regarded widely as a phenomenal success. Lackwanna, the city where it is located, is immensely proud of the project; it brought jobs, money, and not a little bit of fame. My concern with this thesis then, was to understand why Steel Winds was such a success; why that community – developer relationship had succeeded where so many others had failed. First though, it was imperative to me to get an understanding of the state of renewable energy in the United States – where it came from, how it is developed, and the hurdles it faces.

This thesis is broken down into five chapters. The first will focus on general view of renewable energy in the United States, including an examination of a number of different policy, regulatory and support mechanisms that helped bring renewables to market. In addition, this chapter will identify actors that are working against renewable energy at the national and state levels, and the interests they represent. The second chapter will narrow this thesis' focus to New York state, and will examine the specific support mechanisms and structures in place that allowed renewables to gain a foothold in the empire state. This chapter will also examine the beginnings, and forms, of resistance that took place in New York. Following this, the third chapter will narrow it's focus even further, to present the case study at the heart of this thesis, that of Steel Winds in Lackawanna, NY. This chapter will examine the situation on the ground there, as well as the different actors in place that united to push wind energy as a solution to the area's problems. The fourth chapter will examine the permitting and approval for process for the site in Lackawanna, NY (where Steel Winds is

located), and how the actors united as policy entrepreneurs to move the project forward. Chapter five will be given over to a discussion of this thesis' findings, conclusions and recommendations for future study. Further information pertaining to case study methodology; demographics and other relevant information will be referenced throughout, and included in the appendices.

Chapter 1 – An Examination of Renewable Energy

Part 1: What is Renewable Energy Generation?

One of the most challenging questions facing renewable energy development originates not in the technology itself, but rather, what precisely the definition of renewables should include. Like many other things, the category of ‘renewable’ is often in the eye of the beholder – what counts as renewable generation in one part of the United States often does not in another (“DSIRE” 2015a; “DSIRE” 2015b). Even among academics, there are some significant disagreements. Is biomass generation of energy from wood (or some other organic materials) actually carbon neutral (Sheppard 2015; Zanchi, Pena, and Bird 2012)? Is cutting down Louisiana’s forests to send them abroad actually a sustainable decision (Moskowitz 2014)? The answers are not clear.

Nevertheless, the core 'renewable' technologies have generally been agreed upon by both legislatures and industry. I touched on them briefly in the

introduction, those technologies that encompass hydroelectric, solar and wind generation. Of these, it is hydroelectric generation that is the odd one out. Largely peaking during the 1960s, dams have fallen out of favor in the United States due in part to an increasing focus on the physical impacts of the building of large dams on the surrounding areas (Goldsmith et al. 1984). For these and other reasons, it is unlikely the United States will be investing too much more in their construction despite their significant energy generation capabilities. Moreover, the issues and concerns that govern investment in large hydroelectric power plants are remarkably different from those experienced by solar and wind developers – neither wind nor solar generally have to worry about building fish bypass streams. Nevertheless, existing hydroelectric infrastructure often makes up a large portion of an individual states' renewable generation capacity (Burrell 2015; NYISO 2015), and therefore warrants mention. Indeed, much of New York's own renewable portfolio standard (RPS) grandfathers in the state's existing hydroelectric capacity (NYSERDA 2015), a point that will be discussed further in Chapter 2.

For all of the reasons listed above, this paper will therefore focus on wind and solar energy in its discussion of renewable energy; and the problems, perils and opportunities of siting said infrastructure.

A Brief History of Solar Energy Generation

Though humanity has been utilizing energy from the sun for several millennia, it has been only recently – within the last century and a half – that we

have been able to utilize it to generate electricity. The very first solar cell, produced out of selenium wafers, was built by American inventor Charles Fritts in 1883. Unfortunately, it proved much too expensive and inefficient to mass produce as a means of generating electricity – returning only 1% of energy received. Despite the relative weaknesses, the cell was an important development. Building on earlier work by William Grylls Adams and Richard Evans Day; Fritts was able to demonstrate for the first time that without any moving parts or heat, light could be used to produce electricity (Gevorkian 2007).

After these early demonstrations however, it was not until the 1950s that engineers at Bell Labs were able to significantly improve on Fritts' original concept. Rather than the 1% efficiency that the selenium cell was able to produce; Daryl Chapin, Calvin Fuller, and Gerald Pearson developed the silicon photovoltaic (PV) cell with a remarkable 6% efficiency – rising to 11% after further development. With the new PV cells, it was now possible to generate enough electricity to power electrical appliances. Even if for most applications solar remained cost prohibitive, the proof of concept for PV was there (Gevorkian 2007).

Since these early experiments, PV has boomed in states that have supported its growth (Solar Energy Industries Association (SEIA) 2014). Nevertheless, photovoltaic cells are neither the beginning nor the end of solar power. Indeed, despite the amount of time humanity has been capable of converting light into electricity, we've been able to convert light to heat for

significantly longer (U.S. Department of Energy 2015). It is on this property that some of the more interesting solar power plants function – those known as Concentrating Solar Power (CSP) plants. Though there are many varieties of CSP plants, the most distinctive power plants in the world are immediately identifiable due to their single, large tower located in the middle of a field of heliostats (mirrors). The 'Power Tower's' heliostats track the sun over the course of a day, focusing light to a single point on the tower in order to create a significant amount of heat. Then, much like a traditional thermal power plant (nuclear, coal, etc.), the heat boils water generating steam, ultimately turning a turbine to generate electricity (Pitz-Paal 2008). Despite a number of advances allowing CSP plants to generate electricity even when the sun isn't shining (such as storing heat in molten salts), these generators often remain cost prohibitive(International Renewable Energy Agency 2012).

Since the introduction of solar generators efficient enough to generate electricity profitably, the technology has undergone a number of different boom / bust phases. Investment in the industry has often swung wildly dependent upon the price of oil (Adler 2015; Goldenberg 2015), politics (Romm 2015), or other confounding outside factors (Rosenfeld 2015) – but costs have nevertheless always come down (Plumer 2015). Even without subsidies, current photovoltaic systems rival even the cheapest forms of fossil fuel generation (Lazard 2014). This is no more clear than in the recent solar power plant tenders in the Middle East, which are hitting very low prices of $.06/KWh. Solar is here to stay (Wood

Mackenzie 2015; Borgmann 2015).

A Brief History of Wind Energy Generation

For as long as man has used and harnessed the power and potential of the sun, he has harnessed the wind for much longer. We have been using wind as a means to drive irrigation screws, grind grain; and perhaps most importantly, drive international commerce through all manner of ocean-going vessels going back to Egyptian and Chinese dynasties (Righter 1996; Iowa Energy Center 2015).

By contrast, using wind to generate electricity is a relatively recent phenomenon. First explored in the late 1800s, wind energy generation relied upon the relatively limited 'forcing' power of wind to create energy – the physical pushing power of wind (Department of Energy (DOE) 2015). Though these early turbines were not the most effective means of generation – indeed, they were primarily used for mechanical tasks that would have otherwise required oxen, water or things besides, they were generally cost effective for small, scattered populations unconnected to the electrical grid (Shere 2013; Righter 1996). Post World War II, however, as electrification reached out to further flung populations around the United States and the world, many of the small, original generators fell out of favor in the face of cheap, fossil fuel generation (Shere 2013; Righter 1996). In the United States at least, wind energy had ceased to be a viable electrical generation tool exiting the 1950s.

The 1970s oil crisis changed all that once again. In response to the rapid increase in the price of crude oil, world governments turned once again to look at

the promise of wind energy. With an expansion of wind energy tax credits – both at the federal and state level – wind energy was able to grow out of the crisis and prove itself as a viable, if small, generation choice in the market (Righter 1996). This, even as the price of oil made its way back down to its historical averages.

Since then, wind energy has taken off – quite literally. While earlier wind turbine designs mostly relied upon the force of wind to generate electricity, modern turbine designs work much like an airplane's wings – using principles of fluid dynamics (lift, drag) to create a more efficient and effective generator device (DOE 2015). More than this however, wind has become an increasingly integral part of American energy generation, making up 4.13% of electrical generation in 2013 (Kessler 2014). From next to no penetration in the American energy mix just 13 years ago, the climb to over four percent is significant indeed (“Wind Farm Growth Through the Years” 2015; American Wind Energy Association (AWEA) 2014).

The Electrical Grid, its Origins and Operations

Though wind and solar hold considerable promise with regards to clean energy generation, every larger, utility scale project is married to an electrical grid that has not seen major, modernizing changes in its operation in over a century. Nevertheless, the grid remains integral to renewable energy generation, so it is critical to understand how it came to be. It was in New York, fittingly, that the first inklings of what would become the largest machine in the world were realized. Driven by the power of the Niagara River, it was at the Adams Power

Station that history was made in 1895 (Hughes 1993). More than that however, it was the 25 mile long transmission line that allowed Buffalo to become one of the richest industrial cities in America at its peak, and introduce the world to electricity through the Pan-American Exposition (Goldman 1983; Siener 2005).

From these early beginnings, electrification spread quickly across the states – coming first to major metropolitan areas through hydroelectric, coal, and ultimately oil fired and nuclear power plants (Hughes 1983). For a century the grid grew, its expansion halted only briefly during the 1930s and 40s as the U.S. focused its efforts to the business of war. By the 1960s, almost the entirety of the United States was wired for electricity, including nearly all of its harder to reach, smaller farms (Brown 1980). A phenomenal accomplishment, the grid has fundamentally changed the way America functions; giving relatively cheap; reliable energy to industry, hospitals and commerce over the entire nation.

Growing out of the grid's need to generate, transmit and deliver electricity was the utility businesses – regulated energy monopolies established across and within the states – developed to manage the energy coming into and out of the grid at all times. These organizations were charged with ensuring that demand for electricity always met the supply of electricity. Entrusted with developing the generation, transmission, and distribution of electricity across these systems; utilities ensure that power is there when it is needed.

A regulated monopoly[1] does, however, have a tendency to resist any

[1] Regulated monopolies are organizations that have been given the authority to generate, transmit, and deliver energy within a state (or service area) without competition. In exchange for this privilege, they have dedicated revenue streams as approved by the state (electricity rates they charge consumers); but must consult with, and get approval from, the state's utility

change. After decades of operation without significant innovation, the United States decided to address increasing concerns about energy efficiency and a lack of clean energy penetration in the nation's grid. Addressing these issues was of paramount importance for the Energy Policy Act of 1992 (Sharp 1992). In addition to allowing states to move forward and introduce competition into their energy markets, the Act was notable for introducing the Production Tax Credit – mentioned earlier – and responsible for really allowing states to open up their electricity markets through deregulation. Since then, a number of states across the country have introduced competition into their energy infrastructure – dividing what had been in many cases a single utility operator into generators; transmission owners, and distributors (Energy Smart 2014). Consumers still pay an electric bill – but now, as in New York, they can choose who they want to pay – and what generating source they want their energy to come from.

How Renewable Energy Makes it to the American Grid

There are two primary ways that renewable energy makes it to the American electrical grid – both speaking to significantly different understandings of how the future of energy will look. On the one hand, developers are investing significant sums in the development and operation of large – scale solar and wind energy generation, building plants capable of generating hundreds of megawatts at peak capacity. These are large, centralized operations that feed energy into the

or services commission in order to raise energy rates on consumers. Because of this structure, which rewards conservative policies and existing generation capacity with dedicated revenue streams, many regulated monopolies have been resistant to enact changes that might upset that balance (Roberts 2015).

electrical grid in much the same way that a nuclear, coal or gas plant might.

There are some differences, however. Unlike the gas or (newer) coal plants, these renewable generators – at least using current technology – are not very capable of load following (California ISO 2010; Denholm et al. 2010). That is to say, when the sun shines or the wind blows – the plant will produce energy. This has produced significant perceived difficulties for utilities – they must ensure that there is sufficient capacity in the grid to accept the energy being produced, when it is being produced – while at the same time planning to immediately ramp up other generation to meet demand as the sun goes down (California ISO 2010). For solar, this particular problem in California is often referred to as the 'Duck Curve,' largely because of its distinctive, fowl-like shape (Farrell 2015). It is less of a concern for wind, which tends to operate at night when a smaller draw is required and fades out when other, more traditional generation comes online.

Renewable energy is not limited to large scale plants however. Through a relatively easy installation, individual owners can set up their own power plants. Solar generation in particular has experienced massive growth into smaller markets – and is appearing with greater and greater frequency on individual homeowner's roofs (Munsell 2014). Small solar panels can significantly supplement an owner's electricity usage as well as feed excess energy back into the grid. Through a billing mechanism known as net metering, many owners receive credits towards their energy bill, and are able to save significant amounts of money as a result (Shah 2014). Wind has been less successful at penetrating

this market however, and has largely been left out of a distributed generation (DG) boom[2] (Orrell and Rhoads-Weaver 2014). Unfortunately, despite the significant benefits of DG; including reduced stress on the electric grid during peak draw (DOE 2007), utilities have begun to see distributed solar as significant threats to their business model (Kind 2013). In response, they have worked to halt the spread of distributed generation in a variety of different state legislatures, to some effect. Through imposing fees on leased solar panel generation; Arizona, for instance, was able to significantly slow the adoption of DG across the state (Wheeland 2015). This is an ongoing problem – with changes in net metering schemes being proposed across the country (Elsner 2013). It is not a surprise, however – as mentioned earlier, many American utilities currently see DG as an existential threat to their very existence, no matter how overblown such thinking may be (Nadel and Herndon 2014). Still, there is evidence to suggest they may be on to something – especially if we look to E.On – a major German utility that divested itself totally of its money losing fossil fuel assets to focus solely on renewable energy. This decision was supported in part by a generous Feed-In-Tariff instrument, the likes of which are hard to come by in the states (Reed 2014).

No matter the reasoning, utilities frequently see renewable energy (both distributed and not) as a threat – to their bottom line, their monopolies, and subsequently, their political and cultural power (Kind 2013; Elsner 2013). For

[2] Distributed Generation (DG) units in this paper are small, modular, energy generation and storage technologies that provide electric capacity or energy where it's consumed (NREL 2002)

distributed generation, this is due to a variety of policies that promote customer sited solar over grid delivered electricity. One of these policies is net-metering. A popular renewable energy support mechanism across the U.S., net-metering requires that utilities buy back electricity produced by a customer. This is at the same time as DG is also reducing the customer's billable electricity usage. For utilities, both of these features have the potential to significantly impact their bottom line (Kind 2013). Overcoming this bias requires significant grassroots pressure – and renewable energy developers cannot afford to make mistakes that may turn potential allies against them.

Part 2: Renewable Energy – From Technology to Installation

As mentioned earlier, renewable energy generation in the United States has had its fair share of ups and downs over the years, but through it all has hung on, and indeed, has prospered. Nevertheless, even during the 2000s, renewable energy generation required a significant amount of support to justify investment. In 2009 for instance, the Levelized Cost of Energy (LCoE) – the capital cost necessary to produce a megawatt hour of electricity – reached $110 for wind energy per megawatt hour (MWh), while the LCoE of ground mounted solar rested at around $141/MWh (Lazard 2010). In many instances, such high costs would make an investment in renewable resources cost prohibitive[3] – without significant support. Clearly, however, renewables are taking off in the United

[3] In contrast, the most efficient gas plant in 2009 could run at under $96/MWh, but more frequently than either wind or solar, and thus have greater value.

States. So, where did that support come from?

Renewable Energy Financial Support Programs

The first real exploration of utility scale wind farms, supported by tax credits and power purchase agreements, came out of California in 1982. The 30 year, Standard Offer Contracts required utilities in California to make long-term purchase agreements with renewable energy developers. Such stability allowed a significantly greater investment in renewables – as well as a regulated, secure source of income as the payments came in. In conjunction with the Federal Energy Investment Tax Credit (ITC), a small wind boom blew through California right up until 1986 when the original ITC expired. Investment and research into renewables generally moved to Europe after that, becoming infeasible in the states without federal support (Shere 2013; Righter 1996; Gipe 1995).

It was not until 1992 and the passage of the Production Tax Credit (PTC) that wind became viable once again in the United States. Though it's operated in very much a boom-bust fashion in the U.S. since then, the PTC has been essential in order to justify investments in renewable energy – delivering a corporate tax credit for owners of $0.023 for every kilowatt hour (kWh) produced ("DSIRE" 2015c). This has driven significant investment in the industry – and has helped lower the cost of wind turbine power plants in general. More importantly, perhaps, it has given the industry time to develop more affordable and efficient generators – bringing the overall cost of turbines down enough to directly compete, or out-compete, fossil fuel fired generators. Indeed, wind can now do so

even without subsidies in most regions of the United States (excluding the Southeast) (Lazard 2014).

Solar too, has benefited from significant federal support, through the Investment Tax Credit (ITC). Functioning much in the same way that the PTC does, the ITC is a 30% tax credit on eligible solar developments, both commercial and residential ("DSIRE" 2015d). Much as the PTC has allowed developers to bring the costs of wind energy down by developing larger, more efficient machines, so too has the ITC allowed solar developers to bring the costs of solar down to more manageable levels. This can be seen most clearly in Austin, where the city's energy utility recently signed a deal to purchase 150 MW of solar, at less than 5 cents a kilowatt hour for 20 years (Wesoff 2014). The deal done here is a perfect example of the variety of schema used to reduce the costs of renewable energy for private investors.

This is not to say that states are without their own incentives to develop wind and solar generation. Indeed, many are in the same vein as the federal PTC and ITC, and are often used in conjunction with their federal counterparts. Though these benefits may ultimately *reduce* the cost of renewably generated electricity, they nonetheless do not require states to *develop* renewable generation. For that, many states have turned to Renewable Energy Portfolio Standards (RPS).

Renewable Energy Portfolio Standards

As with any disruptive industry or technology, renewables faced

significant headwinds as they began to compete with established generators. Indeed, compared to nuclear, oil, gas and coal, renewables have had significantly less financial and political support than their competitors – and that continues right up until the present day (Sills 2015; Pfund and Healey 2011). How then, do states support the nascent industry despite these factors?

For the most part, the answer has been through the development of individual state RPSs. Originally conceived of in Iowa in 1983, an RPS requires utilities within the state to produce a certain amount of energy through renewable sources – generally rising over time and ending at a set date. This can be either a percentage of total energy generated – as in Colorado (which has different percentage requirements dependent upon the utility or cooperative under discussion), or a specific megawatt target of generation required (Rabe 2006; Berry and Jaccard 2001).

While an RPS is for the most part as individual as the state it was conceived in, there are generally two main streams that utilities and cooperatives can go about meeting RPS goals. The first stream encourages actual generation – such that a state can only meet its RPS's requirements through carrying various renewable energy projects through from proposal to completion. The second stream is through the sale of Renewable Energy Credits or RECs. Sometimes, there is a mixture of systems. This is clear in Massachusetts, where there is both a mandated solar target, as well as a REC trading system incorporating the rest of New England (Department of Energy Resources (DOER) 2008).

Even with the mandate – percentage or otherwise – there have been some problems. As alluded to earlier, different states have different RPS or RPS equivalents. For instance, Pennsylvania includes a variety of coal based fuels in their Alternative Energy Portfolio Standard, such as coal gasification, waste coal, coal mine methane and others. These are not renewable resources, but are nevertheless included as part of their RPS (“DSIRE” 2015e). Moreover, there are significant differences in RPS success rates – that is, the deployment of renewable energy resources - dependent on whether they are generation based versus credit based. While there have been a number of studies exploring the success rates of RPS's, they have generally lumped the credit streams in with the generation streams. This has often given something of a wrong impression of the overall success of the RPS systems – in that they've been lumping together a relatively successful programs (generation standards), with relatively unsuccessful programs (credits) (Yin and Powers 2010). For the most part, when actual generation is involved, RPSs work, and work well (Yin and Powers 2010; Eastin 2014).

Part 3: Factors of Development

More than federal and state policy incentives and renewable portfolio standards, there are, perhaps understandably, a number of other concerns that go into renewable energy development over and above tax credits and grid penetration. In a number of different instances, renewables can be derailed due to siting issues, financing concerns (over and above tax credits), and staunch, organized opposition.

Siting

More than any other concern in the early days of renewable deployment; siting was, and remains, a problem (Righter 1996; Wolsink 2000a; Wolsink 2007; Christmann 2015). For wind generation in particular, many early developments were put up in locations that were not necessarily ideal for industrial wind development. These included bird or bat migratory corridors (Smallwood and Thelander 2004), as well as siting wind farms with the appearance of cronyism (Cuomo 2009).

For the most part, these early siting errors were not malicious – like any new technology, there had simply not been enough work done to explore how the siting of wind turbines might play into larger ecological (and other) systems (Righter 1996; Smallwood and Thelander 2004; Yonker 2015). As time has gone on, and as wind has become an ever more important part of our electrical system, the amount of research done on turbines, siting and best practices has increased significantly. More importantly, the research is made up of expertise developed over multiple states and stakeholders, by groups that often start from very different perspectives. With such variety, the cumulative evidence has helped assuage many community concerns.

That is not to say that all siting issues can be addressed through technical changes or differences in development styles. Instead, many complaints against wind turbines are now based on things that are slightly harder to pin down – the effect on a view, 'wind turbine sickness,' infrasound and other more difficult to quantify objections (Rohr et al. 2013; Pasqualetti, Gipe, and Righter 2002; Chief

Medical Officer of Health 2010). Though these complaints can have a certain amount of merit, they are often spread by organizations that have significant stakes in preventing the expansion of renewables – and who frequently resort to outright lying about the pros and cons of wind power and other renewables (Elsner 2013; Lowry 2014; Rocky Mountain Institute (RMI) 2013). There are also significant concerns about where wind turbines go, specifically in regards to property lines. As turbines on a property often end up significantly benefiting the land owners, if there appears to be collusion or impropriety in siting them in any way; it can stir resentment and opposition (Confessore 2008b).

Financing

How to finance renewables is one of the toughest problems facing the sector. Though renewables are capable of operating effectively without consideration to fuel costs (as sun and wind are free), renewables nevertheless retain significant development costs – large, utility scale projects (dozens of megawatts or more) often run into the hundreds of millions of dollars. Occasionally, these projects can cost over a couple billion (Cassidy 2015). Though this price tag is often par for the course among fossil fueled and nuclear generators, they have one significant advantage that renewables producers lack. That advantage is the Master Limited Partnership (MLP). A part of federal tax code for decades now, the MLP allows developers to sell shares in a project while at the same time avoiding taxes on any profits – a construct that, should it be applied to renewables would allow and encourage significant investment in the

sector (Flannery and Rickerson 2014). Instead, wind and solar developers have to rely on debt or equity financing, often based on a power purchase agreements they're able to sign before even the first turbine or panel is installed (Wesoff 2014; Flannery and Rickerson 2014). This can have a somewhat chilling effect on development – as these financing methods don't have access to the wealthier investors available in MLPs.

In an effort to work around these issues, there is an increasing focus on yield cos. Though not MLPs, they are often able to perform a very similar function, and have been used successfully by a number of different developers to raise funds. Yield cos work by bundling a number of assets into a single financial package, and issue shares on that package. Like MLPs, yield cos are structured so as to avoid double taxation – once at corporate and again at the shareholder level (Urdanick 2014). Despite these benefits, there are only a limited number of yield cos operating in the U.S. at the moment – and due to their nature of being relatively new to the financing scene they retain a significant amount of financial risk (Urdanick 2014; Wesoff 2015).

Organized Opposition

One of the most pernicious actors on renewable energy, as alluded to above, is that of political and non-political actors. Throughout the United States there are individuals and organizations actively working to limit, and repeal renewable portfolio standards (Lowry 2014; Elsner 2015). For the most part, they are financed by incumbent generators and fossil fuel producers such as Peabody

Energy and Koch Industries. These organizations finance bill mills such as the American Legislative Exchange Council (ALEC), and other groups that are actively engaged in sowing doubt about the costs, benefits, and effectiveness of renewable energy (Lowry 2014; Phillips 2014b; Scola 2012; Negin 2013; Phillips 2014a).

Opponents have had some success. This is particularly true in Ohio, where a bill passed in 2014 that froze the state's RPS and forced it to begin investigating the effectiveness of its implementation and procurement policies (Gallucci 2014). Unfortunately, this freeze has had a significant impact not only on Ohio's renewable market, but also that of a number of neighboring states that participated in that market (Rafalson 2015). In addition, the RPS of West Virginia was repealed entirely, though that repeal was mostly symbolic due to the RPS' relative paucity of measures that would support actual renewable energy development (Overton 2015).

What is clear, then, is that any support of renewable energy is contingent, in many respects, on how much support – of consumers, politicians, and otherwise – developers can get on side. The more grassroots support renewables have; the greater their strength and support in state legislatures across the country, the better chances they will have at continuing to grow and reducing the impact of fossil fuels on the environment. This is why good, successful relationships between developers and communities are so integral to the overall success of renewables. It is also why this thesis will explore the relationship Lackawanna has

with BQ Energy – beginning with an examination of what the situation in New York looked like before BQ began to look at Lackawanna for the Steel Winds development.

Chapter 2 – A Recent History of Energy in New York

Part 1: The New York Grid and its Operators

Though the Energy Policy Act of 1992 began the process of deregulation, it was the U.S. Federal Energy Regulatory Committee's Order 888 that implemented the act, setting New York and a variety of other states on the path to full deregulation. At the same time, Order 888 worked to ensure that deregulation would proceed fairly, laying out a specific code of conduct that helped states transition to a more competitive energy environment (Federal Energy Regulatory Commission (FERC) 1996). In 1997, this policy came to New York and allowed the creation of the New York Independent System Operator (NYISO). It was NYISO that stepped in to manage the distribution of electricity from the various generators across the state – and tasked with deciding what generators should have access to the grid, and when (NYISO 2009).

More importantly, NYISO was part and parcel of a series of energy reforms that the state initiated over the late 90s and early 2000s. First up was the separation of investor owned generation capacity from transmission and distribution of electricity. Creating a market where any number of generators (fossil, renewable, nuclear), could bid in helped greatly to diversify New York's energy supply – and helped create an opening for alternative energy providers to gain access to the grid (NYISO n.d.). While it's not necessarily clear that deregulation and competitive markets assist directly in the expansion of

renewable energy, there are definitely ancillary benefits that have been measured (Palmer and Burtraw 2005). Most importantly, however, deregulation has allowed NYISO to operate in its own space. With complete control over grid access in New York, when NYISO decides to explore an alternative means of doing business to make its operations more efficient or effective, it does not have to coordinate with other parties. It is a liberty that NYISO has utilized a number of times, and one that allows it to continue being one of the more forward looking independent system operators in the states – with a significant and measurable impact on the deployment of renewables across the state (NYISO 2009). Indeed, one of the most important things NYISO has done to encourage the growth of renewables in the state has been to allow wind energy generators to participate directly in the system's 'economic dispatch of electricity.' Rather than curtailing wind generation when not needed as had been done previously, since 2009 NYISO has allowed wind to operate in the 'real-time' or 'spot' market (NYISO 2009). This gives wind generators license to operate more frequently, as their energy is transferred across the state and away from congested transmission lines – instead of waiting for those lines to free up (Gonzales et al. 2008). In conjunction with NYISO's energy purchasing process and day ahead markets, the economic dispatch of electricity has served to displace significant amounts of fossil fueled generation (J. Morris et al. 2013).

NYISO is not the lone, unique aspect of New York's electricity markets. It is important to realize that the state has long had a somewhat different perspective on energy than many others. This was no more clear than in the creation of the

New York State Energy and Research Development Authority (NYSERDA) in 1975 (New York State 1975). Reconstituted from the New York State Atomic and Space Development Authority, NYSERDA was established in the midst of the oil crisis to drive the development and implementation of “safe, dependable, renewable and economic energy sources and the conservation of energy and energy resources (New York State 1975).” For a long time, NYSERDA occupied a singularly unique position among institutions in the United States. It is a research institution dedicated to renewables and energy efficiency funded (since 1998), through a systems benefit charge (SBC) on New York electricity bills. It is also the administrator of a variety of grant programs throughout the state, programs that seek to bolster renewable energy and energy efficiency programs; while seeking to expand clean energy jobs and drive connections between clean tech companies. NYSERDA is also the centralized authority through which the state's efforts to meet its Renewable Portfolio Standard are measured (“DSIRE” 2015a). In addition, it is through NYSERDA that supportive funding is dispersed to renewable energy projects across the state. This latter program is funded through a surcharge on each kilowatt-hour sold by the state's investor owned utilities (“DSIRE” 2015a). Both of these charges will be explored further in this chapter.

Part 2: Renewables in New York State

Though making up a significant part of the state's generating capacity in its earliest days, hydroelectric power has since run out of room to grow. Many of the state's largest rivers are already dammed, and while new run-of-river and other distributed generation technologies are expanding hydro generation to some of the state's smaller tributaries; nothing on the scale of the Niagara Power Project will be built anytime soon (New York State Department of Environmental Conservation (DEC) 2015). The options that do exist are for the most part made up of innovative hydro-kinetic generation (underwater turbines), and the re-powering of existing hydroelectric plants. Nevertheless, electricity use in NY did not end once the state ran out of rivers and streams to dam. Instead, the majority of generation in the state now comes from fossil fuels. In 2014, for instance, coal, oil and gas fuels made up 66% of the state's generational capacity, with renewables (including 17% from the water projects mentioned above) – and nuclear – making up the remainder (see Fig. 1)(NYISO 2014).

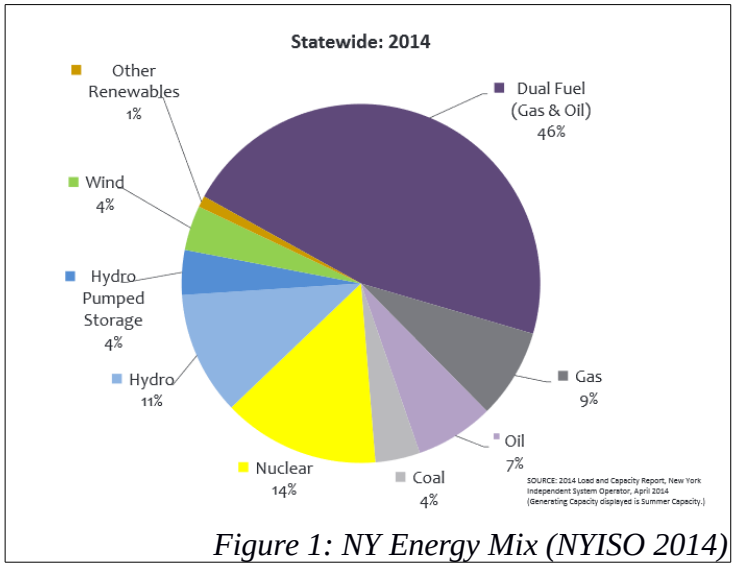

Figure 1: NY Energy Mix (NYISO 2014)

Despite the state's long history of using readily available natural resources,

wind and solar power generation came slowly to New York. In 1999, when the installed wind generation of California reached 1,616 megawatts on the backs of the tax breaks and incentives discussed in the previous chapter, New York had precisely 0 MW of generation (National Renewable Energy Laboratory (NREL) 2015). The first major, utility scale wind power plants were introduced to the electrical grid in 2000, with the Wethersfield Wind and Madison Wind power projects – bringing the states' cumulative generation up to 18 MW (United States Geological Survey 2013). The next plant to come online in New York after that was the Fenner Wind Farm in 2001, a 30 MW project in Central New York that operates a renewable energy education facility, including tours of the project itself (Fenner Renewable Energy Education Center 2011).

For the next four years however, the wind industry within the state stagnated. Not a single project opened across New York (NREL 2015), though this period served to be the calm before the storm. While it may be difficult to lay this freeze on any single cause, the state's very public outreach program on the creation of an RPS may have caused some developers to take the wait-and-see approach (Morris et al. 2013; Tug Hill Commission 2003). Following the passage of the RPS through the Public Services Commission[4] in 2004-2005 with an aim at 23% renewables by 2013, NYSERDA took over operations and issued the first solicitation for renewable energy in the state (J. Morris et al. 2013). The interest was immediate, and resulted in a massive jump in renewable energy generation

[4] In New York, the public services commission (PSC) is the body that regulates and governs the investor owned utilities (IOUs) within the state. The PSC therefore has the power to allow rate and regulatory changes, including opening the state to renewable energy (New York State Public Services Commission 2015).

capacity. Indeed, one of the largest wind farms on the east coast – Maple Ridge Wind Farm – came online in 2005 with the first solicitation, and is actively generating over 300 MW of clean energy (NYSERDA 2015a; Iberdrola 2015). As a result of these solicitations, New York currently boasts one of the highest total amounts of wind power generation in the United States – at 1,748 MW (NREL 2015).

Solar, too, proved problematic to implement across the state. In 2008, the first year for which the Interstate Renewable Energy Council (IREC) collected data on solar installations, New York's installed capacity was negligible, at 21.9 MW (Sherwood 2009). Neighbor New Jersey, on the other hand, boasted 70 MW of solar generation. For the most part, New York's solar installations were net-metered and customer sited – roughly 2 MW of the capacity installed in 2008 were utility scale. Significant technical and regulatory difficulties remained in the interconnection and net-metering of solar generation within the state, making larger projects difficult to develop and run profitably (Sherwood 2009). New York has since embraced the sun, however, with the adoption of the NY-Sun initiative. Launched in 2012, the initiative is a billion dollar effort to expand the reach of solar power across the state. This includes educational tools, grants, and the distinct effort to build solar up enough within the state to support itself independent of governmental assistance (NYSERDA 2015b).

Part 3: Against the Wind: Municipal Opposition Begins

For all the benefits that clean energy may provide, a wind or solar farm's path from proposal, to permit, to generation has never been clear. As covered in the previous chapter, there were any number of problems with early wind generation devices – and the arguments against these early technologies have continued and been embraced by wind farm opponents of more modern technologies (National Wind Watch 2015a). Siting was, and remains a problem, the relatively new nature of wind energy technology has thrown up a fair amount of obstacles in and of itself – tied to the mechanical functioning of turbines and concerns such as 'infrasound.'

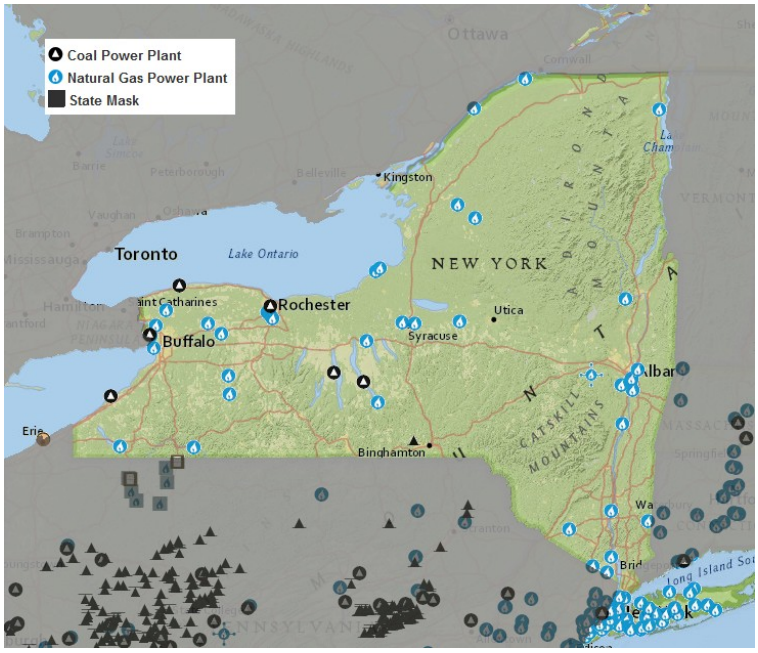

Figure 2: NY Fossil Fired Generators (EIA 2014)

To begin with, around the turn of the century New York was not well equipped to deal with these new renewable energy proposals. They represented, in many respects, a far more fundamental connection with energy generation than many municipalities had heretofore experienced – particularly in the high wind

speed areas of the state. For a better understanding of this, it is illustrative to look at the distribution of fossil fueled power plants in the state (see Fig 2)(EIA 2014). For the most part, they are concentrated around the population centers of the state, both upstate and down. Buffalo hosts a few gas and coal plants, as does Rochester – with New York City and Long Island hosting well over a dozen installations in the state alone, and additional electricity imports from outside of the state as needed. Fossil fired generators are centrally located, able to provide electricity to large populations without too much in line loss (loss of electricity in transmission, a function of distance from generator to consumer), and are more physically compact. Which all boils down to say that roughly speaking, the more rural populations of New York have rarely encountered a coal or natural gas power plant in their respective regions.

That changed fundamentally with the introduction of renewable energy – particularly that of wind. With more specific siting requirements than the more or less agnostic fossil fired plants within the state, renewables have a limited area in which they can generate the sufficient capacity necessary to make investment worthwhile. For wind energy in New York; these areas generally correspond to municipalities and regions that have never dealt with large infrastructure projects – and the concomitant difficulties such projects often entail (see Fig. 3)(EIA 2014). Suddenly, towns with under 1,000 residents, sparse infrastructure and governments more equipped to deal with farming and hunting concerns than power plants were given the power to allow or deny zoning and associated permits for massive infrastructure projects the likes of which they had never seen

and were ill equipped to handle (Ploetz 2005). Understandably, there was something of a backlash – taking the form of wind moratoriums (Confessore 2008; The Daily Star 2007; Ploetz 2005).

As described by the NYS Department of State, a moratorium is a "local law or ordinance that temporarily suspends a landowner's right to obtain development approvals while the community considers and potentially adopts changes to its comprehensive plan[5], land use regulations or both, to address circumstances not addressed by its current laws (Division of Local Government 2006)." Faced with development challenges that in many respects eclipsed the ability of governments to deal with, temporary moratorium on wind generation – generally lasting from three to six months, began sprouting up across the state. Putting a freeze on development allowed towns to consult with lawyers, write up new regulations, and generally prepare for an increased role for wind in the town's day to day operations (Giacalone 2002; NYSERDA 2005). Occasionally however, moratoriums were not means to an end, but rather, an end in and of itself.

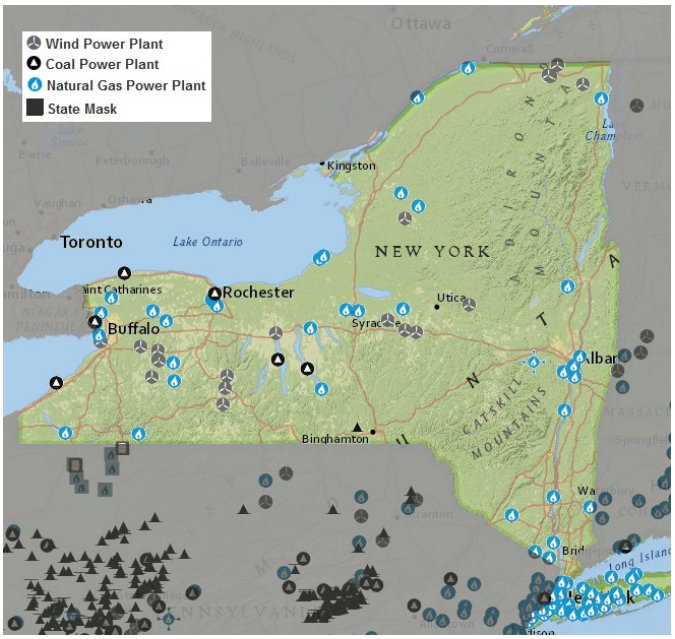

Figure 3: NY Wind and Fossil Fired Generators (EIA 2014)

[5] Comprehensive plans are not required in NY, some municipalities simply have them as their guiding documents instead of a collection of zoning regulations

One of the first wind moratoriums enacted in New York came in the small Erie County town of Sardinia. Proposed by Zilkha Renewable Energy (a wind energy developer) as the site of a $50 million project, the town responded by quickly scrambling to enact a wind farm moratorium to limit any potential turbines from going up (Ploetz 2005). Ten years later, however, the moratorium is now an enshrined part of the town code and will likely remain as such for some time (Town of Sardinia Planning Board 2012). This is especially true given the wide latitude judges are allowed in order to interpret whether a moratorium was harmful to development or not. In the case of *Ecogen Llc. v. Town of Italy*, the town successfully defended itself from a developer who had begun to lose patience at the ever extending moratorium the town had put in place. Despite the judge finding that the town's extension was somewhat "curious and suspicious" (running two years), he did not order the end of the moratorium; contingent on the town developing a comprehensive plan within 90 days of the court's order (Ecogen, Llc v. Town of Italy 2006).

Following these first efforts, moratorium were established in a variety of towns across the state – including the towns of Andes, Meredith, Bovina and others. Some of these towns were being looked at by developers (such as Invenergy and Airtricity) for wind energy, others weren't – but many nevertheless felt the pressure of what might happen if they were approached and were caught unprepared (Cudmore 2006).

Part 4: Blown Away: Wind on the other side of the Moratorium

Despite the moratorium described above, New York nevertheless had a number of municipalities that were less inclined to put wind off indefinitely, and instead worked to develop varying means by which they could accommodate these new technologies into their existing codes.

For some towns, the best way to accommodate wind power was in the creation of wind power overlay districts, as in Martinsburg. Home to the majority of turbines in the Maple Ridge Wind Farm, Martinsburg is a small, rural area with a limited business district and town; which incorporates agricultural and rural residential districts. To not disturb these particular delineations, the town decided that rather than create new, wind turbine specific zoning; it would instead develop a wind power overlay district, allowing wind turbines to be developed on certain other territories. For Martinsburg, as well as other well established towns, this made a considerable amount of sense. Much of the land within the town's boundaries had already been devoted to specific use. In combination with an Environmental Assessment Form and a variety of other physical siting requirements (survey maps, specific setbacks from road and close residences), Martinsburg was able to open its borders to even greater development (NYSERDA 2005).

In contrast to the relatively simple zoning exercise as evidenced above in Martinsburg; the town of Fenner, home to one of the first wind farms in New York, adopted a remarkably convoluted zoning schema. Fenner's wind turbine

provision reflects, in many ways, a lot of the anxieties that New York towns confronted when approached by developers. The town's desire to ensure that all possible issues that might crop up in development are addressed yielded a zoning code based on mitigating as many concerns as possible. These included the development of multiple site plans, special use permits, periodic review of zoning and legislation; as well as a host of specific technology requirements and standards the town deemed necessary for the operation of the wind farm (NYSERDA 2005). More than anything else, the measures Martinsburg and Fenner took were indicative of the kind of planning aid the state was able to provide – which is to say, not much. It was not until 2009, and the publishing of NYSERDA's “Wind Energy Toolkit,” that the state was finally able to offer comprehensive guidance on a number of issues associated with wind farm siting and development (AWS Truewind, LLC 2009).

Part 5: Citizen Led Opposition to Wind

Examining political and planning opposition to wind energy in New York is not, however, the full story. To understand more fully the arguments against wind energy that opposition figures use – it is necessary to understand how many of these arguments, while often rooted in fact, have not been adapted to the changing reality of renewable energy.

One of the best resources for these arguments is the National Wind Watch (NWW) website. Organized in 2005, the site has become something of a partisan clearinghouse on data for wind energy opposition (National Wind Watch 2015b).

Though many of their anti-wind resources and FAQs are based on out-of-date information (relying on EIA estimates of renewable energy penetration in 2030 from 2005, a resource proven wrong time and again (Marcacci 2015; Meister Consultants Group 2015)), the site remains an excellent collector of all news relating to wind and wind farms – both good and bad. In New York, it is not hard to find its influence – and talking points – in many of the opposition op-eds and articles in newspapers decrying wind energy in the state (Kellogg 2007b; Kellogg 2007a; Ploetz 2005). It is for this reason that any discussion of renewable energy – specifically wind in New York – should include a discussion on how legitimate problems and concerns with renewable energy grew, in the minds of their opposition, to become insurmountable hurdles that wind and solar would never be able to overcome.

The Arguments

Though I touched briefly on some of these arguments in Chapter One and earlier within this chapter, it is nevertheless important to return to them once again to view them in the context of New York. Aside from the concerns over health and environment evidenced in the previous chapter, these can be isolated into three specific areas of concern – those of technology, fiduciary issues, and the more amorphous and often stickier subjective notions of viewshed and what the character and value of a place should be.

Of technological concerns, perhaps the most interesting question posed by opponents is one that has been difficult to address. This is largely as a result of the

strength of its assertion – that 'no meaningful reduction of fossil fuel use per unit of electricity consumed has ever been documented' (National Wind Watch (NWW) 2005). On its face, and at its time, the statement was true. Unsurprisingly, however, there is a major problem with that assertion. Namely, that it presumes the grid and grid generators operate in a way that is fundamentally opposite to their organizing principles – and then faults them for not doing so. It is also remarkably disingenuous – existing in that perfect space of propaganda where something can be both true and incredibly wrong. When looking at the electrical grid, it is critical to understand that generation is generally displaced – rather than removed outright[6]. A wind farm adds to cumulative generation capacity, and in 2005, when many of these arguments were first published; wind was not a 1-to-1 substitution (Stilwell 2005). Since then, however, wind farms and renewable energy generation have displaced significant amounts of fossil fuel generation. In New York and other areas, this has generally been coal (EnerNex Corporation 2011; J. Morris et al. 2013). This is in part a result of renewable energy's significantly lower operating costs – so much so that the older, more polluting coal plants are generally pushed from the day ahead and spot markets (J. Morris et al. 2013). In addition, one of the arguments that often accompanies this is that renewables have not decreased carbon emissions (Concerned Citizens of Cattaraugus County 2013; NWW 2005). However, in a report whose impact cannot be understated; CO2 emissions from the energy sector in 2014 stabilized at

[6] In NY, projected electricity use is forecast to remain level, so long as energy efficiency continues improving (NYISO 2014). As plants retire, their generation capacity will be replaced either with more efficient fossil fueled plants, or renewable energy.

2013 levels, largely on the back of a massive build out of renewable energy in China and a continued drop in coal use across the developed world (Schwartz 2015; Bloomberg News 2015). Critically, this occurred as the world economy continued to grow – possibly suggesting a decoupling of growth and fossil fuels (Zeller 2015). All caveats aside (two points do not make a trend, etc.), the importance, and role, renewable energy can play in displacing carbon intensive generation cannot be ignored (Magill 2015a).

Further technological hurdles are introduced and addressed in NWW's various promotional materials – that renewables destabilize the grid or that they require more backup power or complementary generation than gas, coal or nuclear. These arguments have been thoroughly debunked in much greater detail than can be gone into here (Electric Light & Power 2015; NYISO 2010; C. Morris 2015), but it is important to note that some of these arguments can be persuasive to those that do not necessarily understand how the grid works. In regards to the idea that renewables destabilize the grid – the statement is not necessarily false – but again, it does not tell the whole story. Instead, it tells the story from the point of view of incumbent utilities generating baseload power. The large variation in energy output that comes as the wind picks up, or the sun comes out from behind clouds does not necessarily put more stress on the grid, so much as on the grid operators. Accustomed to simply turning a generation unit on or off as required and watching screens, renewable energy requires a bit more shepherding to work in tandem with incumbent generation to the best of its ability (C. Morris 2015). This shepherding comes through in an interview with a German grid engineer,

who is asked: “so instead of merely sitting there looking at screens, the engineers now have to press buttons?” “Yes,” the expert answered with a wry smile, “and each time they have to do so, there is a slight chance of an error, especially human error (C. Morris 2015)". In many regulated markets however, the degree of careful manipulation required is indeed a concern – and a threat – so much so that utilities are running to their regulators to come to their defense; and threatening blackouts and other energy catastrophes if renewable energy is allowed to move forward (Roberts 2015; Warrick 2015; Resnik 2015). In New York's energy market, the deregulation of the utility industry and the introduction of competition have required a grid operator capable of monitoring and directing the flow of energy from many disparate projects, such that a wind farm is no more or less disruptive than any other fossil fueled generator, and all operate under the same rules as they provide energy to the grid (Gonzales et al. 2008). NYISO is unique in that it is one of the few operators that manages electricity only within its state, and has stepped ably into that role to keep the 'disruption' down to a minimum.

As for the second point – that wind and solar require more backup than gas, coal or nuclear (an argument often tied to the idea that wind and solar don't actually reduce greenhouse gas emissions), again the reality is rather different. This is tied into the above point – involving the dispatch of electricity, and how such energy is carefully manipulated and directed around the electrical grid. It's not that wind and solar require back up, so much as wind and solar fulfill specific generation functions – generating during the day (at peak times), and at night and when the wind is blowing – which must be accounted for in their scheduling. It is

the very distributed nature of wind and solar that makes backup less of a concern (National Resources Defense Council (NRDC) 2014; Milligan and Kirby 2007) This is even easier for the New York grid, which pulls data from an integrated sensor that accurately measures wind speed across the whole of the state (Klapp 2008). Indeed, there is evidence to suggest that as more renewables penetrate a grid, there is considerably less and less need for fossil fueled backup (NRDC 2014). This is evident in Germany, where an ever expanding use of renewables has actually stabilized the grid considerably, even as nuclear plants are shut down and coal and natural gas plants are being driven out of business and operation by the plunging return on generation[7] (Morris 2015). This has proven such a threat to utilities in Germany that one of the continents' largest, operating across Europe, recently divested itself of fossil fueled units to focus solely on renewable energy generation – after losing billions for years (Lacey 2014a; Lacey 2014b).

The second sets of arguments that opponents often turn to are those of finances. As has been established, New York's energy billing has two specific charges that support both NYSERDA and the development of renewable energy generation statewide. Though relatively small, these charges serve as a visible reminder that each and every rate-payer in the state is contributing something to their expansion. This is, unsurprisingly, often used as a cudgel to attack the same programs. It is relatively easy to campaign on these charges as increasing the cost of electricity – because they very visibly do so – and rate-payers are not given a

[7] In Germany, there are times where the grid is powered almost entirely by renewables. This pushes generation costs so low that coal and other fossil fueled plants often have to pay the grid operator to take their electricity, on plants they cannot turn off (Morris 2015).

choice as to whether or not they would like to support them. Like the grid issues detailed above however, this is, again, not the whole story. While the SBC and the RPS support charge visibly increase the cost of electricity, the vast savings they deliver to the state largely go unnoticed aside from in policy briefs and among advocates. The utility of renewables, particularly solar, is that they gain access to the grid often at its most expensive peaks. Solar, for instance, comes in during the middle of the day, when electricity is often quite expensive as there is so much of it being used. Likewise, winter – and the associated winds – help with the burden of generation during that season (Energy Information Administration 2015). Indeed, it was wind farms in Texas that helped keep portions of the state from blacking out in 2014's polar vortex, even as some of the state's natural gas plants failed in the cold (Magill 2015b; Valentine 2015; J. Moore and Clements 2014). All of this results in lower costs for the consumer – as prices are held down by generation devoid of fuel costs, often cutting in at critical moments when electricity should be at its most expensive (Morris et al. 2013). Indeed, as one NYISO study suggested, if New York's wind generation could be brought to 8,000 MW, renewables would save rate-payers $1.3 billion in power plant costs a year, showing value enough that the state is now investing in distributed solar generation and demand side energy management around New York City (Ryor and Tawney 2015). Unfortunately, these are cost savings that are poorly translated to electrical bills – so much so that the argument that renewables increase the cost of electricity will continue to remain a potent, if inaccurate, one.

The other problem that made its presence felt on the subject of finances

and siting is that of corruption. To be clear, there has so far not been any indication that any degree of corruption has ever happened as a result of wind or solar energy siting processes, but the perception, and potential for corruption became a significant problem for developers across the state. This was possible, in part, due to the state's rather late entry onto the subject of renewable energy siting, guidance and developer-community relationship management. For the most part, developers interested in putting up a wind farm would approach individual landholders in the towns they were interested in, independently of each other and looking to sign leases for their property. What this meant was that by the time a developer was ready to come to the table to negotiate with a municipality or county on approval or permitting, a significant population had already been signed up to host wind turbines (Confessore 2008). Perhaps unsurprisingly, in the smaller towns and hamlets across the state, quite of few of these interested landowners were either in charge of the municipalities' approval process, or were related to people who were (Hirschey et al. 2014; Confessore 2008). This was perceived as such a problem that Andrew Cuomo, the Attorney General of the state in 2008, began an official investigation into the leasing and business practices of two major wind farm developers in NY, Noble Environmental and First Wind (Raymo 2008). Though these investigations ultimately didn't turn anything up, they did result in a code of conduct for wind developers to help guide them – and communities – in their dealings with each other. Even if just 'sour grapes,' the Wind Industry Ethics Code was an important step in ameliorating some of the concerns about corruption that were beginning to gain

traction (Editorial Page 2008).

The final batch of arguments often wielded against wind energy and other large development projects are significantly more difficult to address than questions of technology, finance and negative health effects; which all have answers rooted in a variety of studies from a multitude of different sources (Sustainable Energy Advantage and Clean Energy Group 2015). Rather than these arguments, it is often the question of what Americans should value that opponents find most compelling in dealing with renewable energy companies and supportive organizations (such as the Sierra Club, Environment New York, and others). Lawsuits against wind farms across the whole of the U.S. are often couched in firm planning and policy arguments (as they should be), but are described in public as concerns with 'turbine impact on viewsheds,' 'ridgelines,' and the character of a place (B. M. Moore, Fresard, and Kuhn 2015; Panebaker 2015; Harland Butler 2009). For opponents, wind farms are often described as 'industrial;' in one article, an opponent of wind turbines in Sheldon, N.Y. hits all the main opposition points – decrying the industrial nature of wind turbines for ruining the area's rural character.

> "One of the problems with a windfarm is that the turbines are classified as industrial devices… [They] are industrial devices by nature… [and seem] to go against the desire of the people to maintain [Sheldon's] rural character." - *(Ploetz 2005)*

Despite these concerns, there are individuals who have lived on the land in upstate New York for generations that have welcomed the different projects with open arms, and have treated them as 'economic bonanzas' (DePalma 2006).

Though opposition voices are often quite loud, in that the effect of wind turbines on 'pastoral views' and the 'rural character' are echoed by residents across the state; windfarms have nevertheless proved beneficial to any number of community hosts. In Eagle, N.Y., residents paid no taxes in 2007 as a result of a Payment In Lieu Of Taxes (PILOT) agreement between the town and Noble Environmental Power, while Lowville, N.Y., and other localities in and around the Maple Ridge farm have funded their school districts and other municipal services thanks to the PILOT agreements with their wind farm neighbors (Ploetz 2007).

Part 7: New York As It Is

New York is not a small state. It is one of the largest in the union, and home to the second most populous city on the continent. It has immense power needs, and some of the highest energy prices in the nation because of them. In spite of these needs, many of the state's attempts to reduce or control energy costs have been shelved – wind and other renewable energy projects across the state have been canceled again and again – as a result of community opposition, financing concerns, and lawsuits. It is partly because of these reasons that the state will miss its RPS goal of 30% renewable energy by 2015 – almost every project in the state is an exercise in bureaucracy – of years of waiting for lawsuits to finish, for funding to be acquired and permitting to go through.

Well, maybe not every project.

Chapter 3: The Path to Steel Winds

Introduction

Given the difficulties explored in Chapter 1 and 2, the development and interconnection of Steel Winds, the subject of this thesis, was by no means a sure bet. Nevertheless, from permitting to building, the eight turbines of the project's first phase were up and running within two years. Given that many of the project's contemporaries in New York have taken significantly longer to build – or have been outright canceled – the story of how Steel Winds got from permitting to approval to generation is an important one, and one that hits particularly close to home for me as well (see Fig. 4 for a timeline of the process)(Arts Services Initiative 2015; Buffalo 2012;

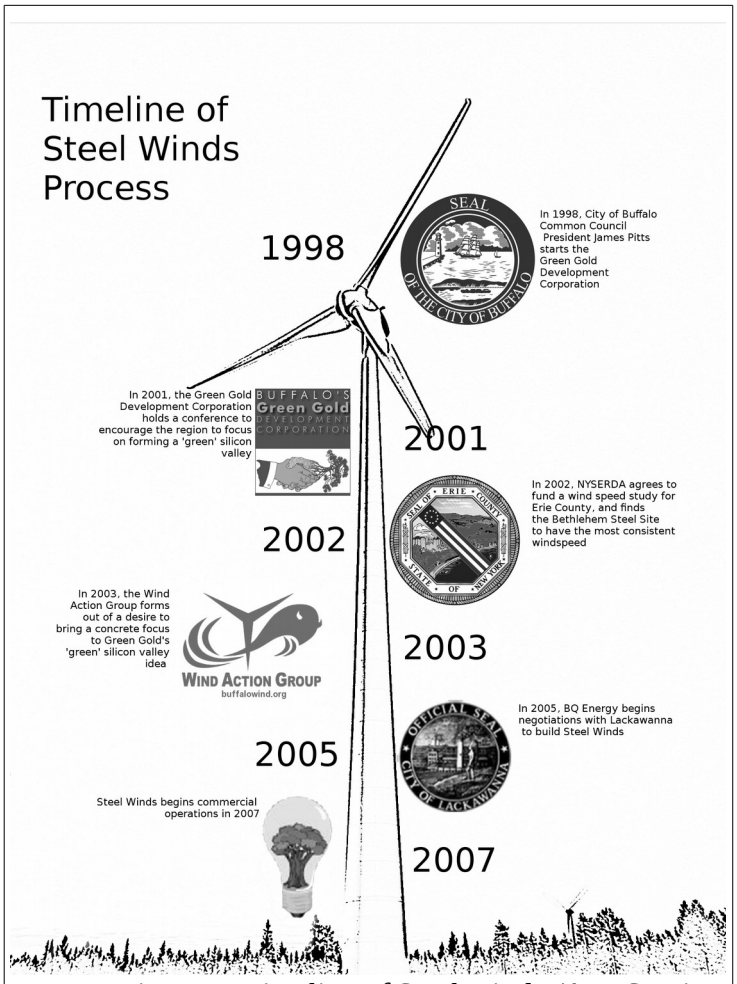

Figure 4: Timeline of Steel Winds (Arts Services Initiative 2015; Buffalo 2012; Green Gold 2003; Lackawanna 2015; Wind Action Group 2015)

Green Gold 2003; Lackawanna 2015; Wind Action Group 2015). Growing up in Buffalo, Steel Winds was the first truly utility scale wind farm that I had ever seen, and one that had been on the periphery of my family and its connections for years. My parents have been friends with, or worked with, many of the people that helped bring Steel Winds to fruition; an asset I was able to use when tracking them down for interviews and their stories. With their assistance, as well as looking through media and internet records, I hope to be able to show just what was it about Lackawanna that made Steel Winds so special. First, however, it's important to get an understanding of what Steel Winds is.

Part 1: Steel Winds

First proposed to the City of Lackawanna in 2005, Steel Winds is the largest, and possibly only, urban sited wind farm in the world. It was developed in two phases, of which only the first is of interest to this thesis. When that phase of Steel Winds began operations in 2007, it was made up of 8 turbines, stretching 474 ft from base to blade tip (United States Geological Survey 2013). The

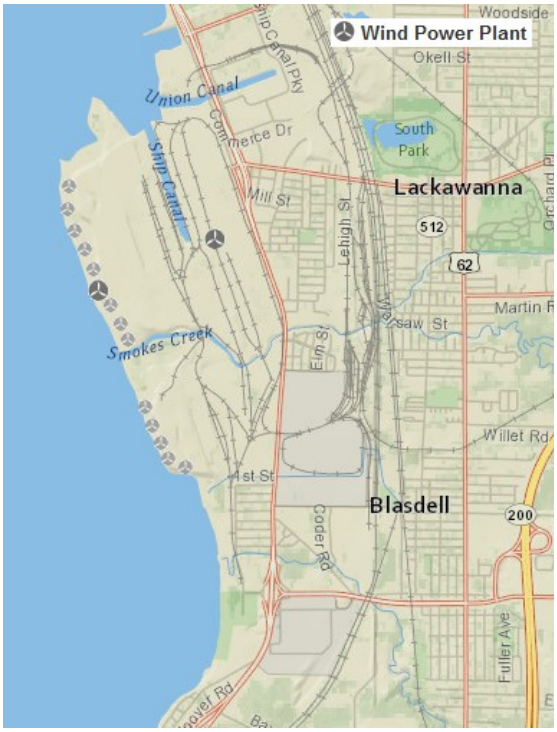

Figure 5: Steel Winds site in Lackawanna, NY (EIA 2014)

turbines are now the second tallest structures in western New York, and use that to their advantage in order to catch the winds off Lake Erie. The turbines are rated at 2.5 MW each, with the overall generation capacity of Phase I at 20 MW. Phase II, completed in 2012, added an additional 6 turbines to the site for a combined total of 35 MW. The entire project spreads over a 30 acre tract in Lackawanna, hugging the lake's coast. The project was unusual in a number of different respects. To begin with, the process that Steel Winds went through to gain approval was significantly different than many of its more rural contemporaries. As mentioned in Chapter 2, in small towns across the state, developers would frequently approach landowners directly in order to sketch out individual leases before approaching the town for permits and approvals. Generally these areas are considered greenfields, exposed primarily to agricultural development. In Lackawanna, Steel Winds went up on a site that had recently been part of the Environmental Protection Agency's superfund program, and was subject to a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) beginning in the 1990s (Environmental Protection Agency n.d.)(see Fig. 5)(EIA 2014). Scheduled to end in 2004, the RFI prevented development on the site for a further two years until Representative Brian Higgins got involved and pushed the EPA to declare the investigation over at the 30 acre site (Higgins 2006). At his urging, supported by Lackawanna and BQ Energy, the site was transferred over to the State's Department of Environment and Conservation and declared clean

enough for development. From there, Lackawanna took over the permitting and authorization of Steel Winds under the State Environmental Quality Review (SEQR) process[8], declaring it fit for development. With the site being cleared, it then qualified for the state's Brownfield Cleanup Program administered by the DEC. This indemnified the developers from any contamination discovered on the site during construction, while providing tax breaks for redevelopment (MacDonald 2007). With that out of the way, the city, having already approved the development permits, and updated its zoning code, Article XI, §230 to codify potential future wind developments in 2007. This was an effort to ensure that the permits which had already been granted were officially a part of Lackawanna's code. The final piece of the puzzle fell in place when Lackawanna authorized a Payment in Lieu of Taxes program for the wind farm. The basis for this can be found in the New York State Assessor's Manual, Vol. 4, Section 4.01; Real Property Tax Law §487. The law recognizes that renewable energy systems on public or private land are exempted from property taxes as a means of spurring development. However, New York administrative bodies (county, towns, etc.) have some leeway as to whether or not they will disallow that exemption. If they choose not to, as in the case of Lackawanna, they may require the generator to enter into a PILOT agreement for the use of the property – irrespective of its

[8] The SEQR process as laid out by the state requires a state agency or unit of local government to provide an assessment for any projects or activities that may have an environmental impact. As the lead authority for Steel Winds, Lackawanna issued a Negative Declaration, saying that there would be no negative impacts due to wind farm development on the site, and thus the project did not require a full environmental impact assessment.

ownership. To that end, in 2005 Lackawanna negotiated an agreement with BQ Energy for $12,500 a turbine, per year, over 15 years. For the original 8 turbines, that amounted to a total of $100,000 a year (Becker 2006). At the end of this process, Steel Winds was connected to New York's grid through NYISO, and began selling energy and renewable energy certificates to Constellation NewEnergy at the end of 2007 (Business Wire 2007). To understand the significance of this project however, it is important to get an understanding of the city in which it was built.

Part 2: Steel Cities No More

The second largest city in the state outside of New York, Buffalo thrived on industry for over a century as the gateway to the west. As the terminus of the Erie Canal, trade with western states drove the area's economy for over a century. Nevertheless, as the structure of global trade changed, Buffalo's economy and economic prowess was concomitantly diminished (Goldman 1983). From its population height of over 500k souls in the 1950s, the city's population fell to around 261k in 2010. More importantly, Buffalo's current population continues to suffer, as 30.7% remain below the poverty line (U. S. Census Bureau 2015a). Buffalo is governed by a Mayor and Common Council system, featuring

representatives from nine districts (City of Buffalo 2015). Of its many suburbs, Buffalo has perhaps the strongest relationship with Lackawanna, just to its south. The economies of the two cities have been intertwined for decades, as have, critically, their media markets. It is this relationship that allows groups such as Green Gold Development Corporation, and the Wind Action Group (described later in this chapter), to be effective advocates for the region.

That having been said, Lackawanna is very much the smaller sibling of it's older sister and its demographics reflect that. It is primarily a working class city, with a population of 18,141 individuals in 2010 (U. S. Census Bureau 2015b). It is governed by a Mayor and city council system with representatives from four different wards and a council president (City of Lackawanna 2015). In 2010, 23.2% of its population was below the federal poverty line, and the largest provider of jobs in the area had long since filed for bankruptcy (Warren 2008). Primarily accessed by a multi-lane raised highway known as the skyway, Lackawanna has for the most part been cut off physically from the Queen City by vacant tanker slips and industrial land slowly being reclaimed by nature. Though it affords quite the view when entering Lackawanna, the lands the skyway passes over make clear what has been lost. The skyway runs into Route 5, which takes the motorist through the city at a quick pace, past the hulking remnants of the Bethlehem Steel Plant; the brownfield and hazardous waste site across from it, and finally the Ford Motor manufacturing plant. Before too long Lackawanna is

gone, and you're out of the city.

While the city is not a shadow of its former self – it is difficult to be darker than when the steel industry was operating there – it nevertheless remains much diminished. What it does have, however, is a legacy of infrastructure that proved invaluable to bringing in renewable energy, and a population eager to see something happen to the vast lands left open, and often poisoned, at the conclusion of the steel industry (Kreiser 2006).

Bethlehem Steel Redevelopment Area

Sprawling over roughly 1,100 acres, the Bethlehem steel site is a massive complex that runs the entire length of Lackawanna's western shore. At its height, the Bethlehem Steel plant in Lackawanna was the lifeblood of the city. It employed thousands of locals, providing steel to all manner of American monuments; including both the Golden Gate Bridge and nearby Peace Bridge, as well as the Hoover Dam. Times changed, however, and though many of the original facilities remain, the company itself was not able to survive long into the new millennium. Going bankrupt in 2001, Bethlehem's assets, including its factories in Lackawanna, were acquired and shut down by the International Steel Group – which itself ultimately was absorbed into the Arcelor Mittal Corporation, the site's current owner (Warren 2008). Through it all, the site has been slowly inching towards complete – or at least manageable remediation – thanks to the

Tecumseh Redevelopment Corporation now operating under Arcelor Mittal's aegis. Lackawanna's fortunes did not just impact themselves, either. Long the stomping ground of the plant's owners and administrative staff, the Queen City's economy was tied directly into the prosperity brought by Lackawanna's and its own industrial areas; the steel mills, grain elevators, and other industry (Goldman 2007). With the decline of Lackawanna, as well as the increasing exodus of educated, white collar workers from Buffalo's downtown core, the region rapidly shifted from a vibrant manufacturing area on the Great Lakes, to a city that, when I was younger, only seemed to be scrapping by.

Part 3: The Region's Sustainable Evolution

Like many other rust-belt cities, Buffalo and Lackawanna were very aware of the problems they faced. To tackle the twin issues of manufacturing loss and brain drain, Buffalo began to turn to a relatively unconventional solution for the states at that time – that of green, sustainable jobs. It was in the late 1990s that sustainability first became a growth mantra at Buffalo's city hall. Though the issues of green development had penetrated other cities to some extent – primarily through their University systems (Nowak 2015), Buffalo was one of the first cities to truly explore sustainability as a guiding principle. This was no more clear than in the creation of the Green Gold Development Corporation by then City of Buffalo Common Council President James Pitts. Incorporated in 1998, the Corporation's guiding principles were “designed to create sustainable

development, meaningful jobs, a better environment and a prosperous and local economy (“Green Gold Expo” 2001).” Green Gold was presented as a solution to relentless growth – an opportunity to address the associated environmental challenges in a meaningful way. More pertinent to the point of brain drain and jobs however, the Green Gold Co. endeavored to recast Buffalo as the 'Silicon valley of environmental technology,' to grow hi-tech green jobs in the city's older manufacturing areas (Hammersley 2000b).

By 2002, the Green Gold Development Corporation had grown into a fairly robust coalition. A year after the corporations' first conference – featuring environmental luminaries such as David Suzuki and Jane Goodall – it boasted a member list of over 40 organizations, met regularly with politicians and worked hard to network and boost member businesses (Hammersley 2000a; Meyer 1999). In Western New York, these were the organizations dedicated to “solving environmental problems with their products or services (“Companies – Green Gold” 2002). The door to an environmentally focused future for the region had been kicked open with a bang – and the idea that Western New York could become a nexus for green investment spread to all levels of society. As the concept relates to Steel Winds, the following four actors and their motivations are the most critical for our understanding[9].

[9] More information on the actors, their organizations, interview methodology and interviewees themselves can be found in the appendices.

The Wind Action Group

After the 2001 conference, it became clear to a number of Green Gold members that for all the good the development corporation was doing in promoting a green, hi-tech workforce; it was nevertheless lacking something of a focus. It was out of this need that the Wind Action Group was formed. Spurred on by a paper produced by Masters of Urban Planning students at the University of Buffalo, WAG was developed to knit together the various groups and individuals pushing wind at the local and regional levels into a cohesive, and directed, whole (Haj-Ahmad et al. 2001; “About Us | Clean Renewable Energy for Buffalo’s Future” 2010). To understand a bit more about how WAG worked, I reached out to a few of the people integral to its creation and operations – Bill Nowak, Terry Yonkers and Derek Bateman.

One of the original Board Members of the Green Gold Corporation, Bill has been involved with the new wave of the environmental movement in Buffalo almost since its inception, and currently heads the New York Geothermal Energy Organization as well as the Sierra Club of Western New York writers group. When WAG formed in 2001, Bill took on the chairmanship of the communication committee, responsible for “raising the level of public discussion and interest in wind energy in Western New York (“Communication Committee” 2004).” Suffice it to say, Bill knows his stuff, and was able to give me a bit of a rundown on what WAG did to really set the ball rolling.

“We did speaker bureaus, position papers, petitions, research papers,

tabling… (Nowak 2015)" With support and blessing from both the county and the Green Gold Development Corporation, WAG set out to deliver on the promise of wind energy (Nowak 2015). And they certainly did. From radio shows, to editorials, reporter conversations and presentations to local groups, wherever there was an event, WAG was there. Though many of these were limited to handing out flyers and getting passers-by to sign different petitions, WAG did have a more in depth presentation they would give to different community representatives. In WNY, such groups included the Daughters of the American Revolution; or politicians such as Council Member Mickey Kearns. This presentation, built with funding from NYSERDA, is one that Bill was understandably fond of – featuring its own soundtrack and an argument for wind energy that covered all the bases; "foreign oil dependence, extreme weather, high energy bills and asthma and other health problems." It was apparently fairly well received by its audience as well, with the nearly 30 WAG presentations generally attracting 10-20 curious individuals (Nowak 2015).

The group was more than just presentations, too, and their online presence was a fair indication of the skills they brought to the table. As Bill notes, WAG was very much a gathering of experts – and counted among its members engineers, lawyers, communications professionals, planners and state employees. Utilizing this expertise, WAG worked to position itself as an organization that would do the grunt work for hypothetical wind developers. This took a variety of

forms – with a focus primarily on the details a developer might need to give the go-ahead on a wind farm. To that end, WAG put out a variety of reports; on siting (how municipalities could change their zoning laws to be more friendly towards wind developers), finances (how wind in Western New York could save ratepayers money), how offshore wind in Lake Erie alone could power the region, and finally, how avian populations would be affected by wind turbine development on the lake.

This last point, however, was not one that the Wind Action Group would have necessarily addressed in detail, if not for the efforts of Terry Yonker. The Director of the Audubon society in Michigan, when Yonker relocated to Western New York he brought with him an enduring affection for lake birds of all kinds, and perhaps more importantly to WAG's efforts, a concrete understanding of some of the arguments that were making the rounds against wind farms across the great lakes. He recognized that bird kill was a problem – and pushed WAG to act on it.

It's important to realize that in the early 2000s, the incident rates of turbine bird-kill were still largely unknown. Many opponents turned to the Altamont Pass wind farm study referenced in Chapter 1 to suggest that all wind farms were dangerous to birds – particularly raptors. For a long time, that misunderstanding persisted, especially in the Great Lakes Wind Collaborative (a coalition of stakeholders interested in climate change and renewable energy across the great lakes) – of which Yonker was a part. To give an idea of what the state of science

was like at the time, there were calls from some in the collaborative to shut down wind farms on a seasonal basis – to be sure that no migrating birds were caught in turbines on their way through. Understandably, this particular proposal was very much viewed as a non-starter in the wind community – with the potential to significantly impact the industry's bottom line. As the issue got increased attention, and as data rolled in, the collaborative was able to narrow the migratory window from days, then to hours – ultimately resulting in the creation of a best practices curtailment policy that a number of energy corporations signed.

It was with these concerns in mind that WAG ultimately helped organize and finance a shore bird study that Yonker did for the Lackawanna site – one that showed that aside from in certain weather conditions – migrating birds would largely be unaffected. As Yonker says, "...migratory birds fly well over the tops of wind turbines, up to 1000ft or more. They only come into contact with turbines if there was really bad lighting at the turbine site, which can confuse them, or if there was really bad weather... (Yonker 2015)." It was Yonker's study – done with a radar system that he used to track migratory bird patterns – that helped dull one of the more significant attack paths that opponents of wind turbines had taken across the state. It was also yet another notch in the belt of WAG's growing efforts to impartially communicate with the public the benefits and challenges of wind farm development.

It was this emphasis on education, communication and outreach that

garnered WAG a reputation as an independent arbiter of information. It was that reputation that set WAG up as the people to talk to when interested parties had questions about wind energy development. Derek Bateman, current chair of WAG's communications committee and formerly of Lake Effect Energy (a failed effort to start a community owned wind farm) emphasizes this, saying - “there was a time when there was no commercial wind in western New York, people didn't know what to make of it. The Wind Action Group was where people came to learn about it – as well as how to site it and promote it (Bateman 2015).” The group’s role in setting the stage for wind energy, in fact, proved so useful to BQ Energy and Steel Winds that in thanks for their contribution, one of the turbines on the site boasts a WAG plaque – commemorating their involvement.

Lackawanna

Around the same time as Green Gold and WAG were getting up and running in Buffalo, Lackawanna was dealing with the fallout from the city's only major employer going bankrupt. Leaving behind a superfund site, the management of the area become a key concern for politicians at the county level, and perhaps more pressingly, at the local level (Warren 2008).

Brownfields are often opportunities for politicians, and Lackawanna's massive complex was no different. In 2005, four years or so after Bethlehem Steel was absorbed by ISG and Arcelor Mittal, not much had happened on the site, but there were plans. “Lackawanna residents 10 years from now hope to look at their

sprawling lakefront and see a marina, park and waterfront greenway instead of belching smoke from a steel plant. They also may find a golf course and a 300-acre business park (Fairbanks and Habuda 2005).” The county executive at the time, Joel Giambra, was particularly fond of the golf course idea – first suggesting in 2003 that a replica of St. Andrew's famous fairways in Scotland would be a good fit for the space (Williams and Tan 2003). Lackawanna was less enamored – they wanted, and needed, something to fill the void in their tax base, and they wanted it quickly.

“We went to the county… the land had been vacant for years at that point. Nothing had happened on it for 25 years, and the county said that they'd get something on it, even if it took another 25. I thought that was ridiculous.” Norman “Norm” Polanski, Mayor of the City of Lackawanna from 2004 to 2012, is an ardent supporter of the wind farm. You can hear it in his voice, how Steel Winds changed Lackawanna's view of itself for the better.

> “This is the first positive thing to go up on the waterfront," Polanski said. "Everybody talks about everything, and nobody is doing anything. But this is going up. Some people will say, 'It's happening too fast.' But are we supposed to wait as long as we're waiting for a new Peace Bridge? We've actually found some people who can make something happen (Becker 2006).”

Yet, when BQ first approached him about the project in early 2005; like many others in the small city, he had never really seen a wind turbine for himself. To get a feel for them, BQ recommended he head out to Wyoming County, just

east of Buffalo, and take a look at Weathersfield wind. After piling in a car with his wife and mother-in-law, Polanski took the trip, and came away impressed – becoming one of the strongest advocates for the project in the area.

After that trip, Polanski became the ambassador for BQ to the city's common council; explaining what a wind farm was, how it looked, what a farm could bring – particularly in regards to the Payment In Lieu Of Taxes (PILOT) program he wanted to sign with the developers. Taking the message to the streets, both Polanski and Ralph Miranda – the director of development under Polanski – held meetings, where they were able to present the turbines to western New Yorkers interested in seeing what could happen on their waterfront. The support, and curiosity they encountered there was almost uniform – with the exception of a restaurant owner that stood up in a meeting Polanski was attending and accused him of collusion with the developers. “I took offense at that,” Polanski tells me; and it's no surprise. The idea had been percolating in the New York state of mind since the approval and development of the Maple Ridge wind farm, earlier that year. It was something Polanski had heard about, even then. “I knew the stories about what was going on upstate, about how leases were signed with the people who had the power to approve the projects... They shouldn't have done that (Polanski 2015).”

Ultimately though, the lone dissenter didn't much affect the perception of the project. Indeed, Paul Curran, Managing Director at BQ Energy ran into the

restauranteur later, where he laughed off his earlier comment. He was a small business owner in view of the wind farm, and had worried that it would affect his customers. Perhaps unsurprisingly, it has not. About the only confusing thing that happened, from Lackawanna's perspective, was the PILOT program. It was not until Polanski went to the county that they were able to establish the city could enter into an agreement and receive funds through the program. After that, the rest was of the process was, aside from the occasional hiccup, smooth sailing.

Erie County

In spite of their dealings with Lackawanna on the subject of Steel Winds, Erie County had been an early proponent of wind energy in the region. It was just the specifics that were difficult to work out. In 2002, the county commissioned a study using NYSERDA funds to examine five different sites in the region for wind power potential – a study that would take roughly three years to complete (Habuda 2005a). At the end of it, the county issued a Request For Proposals (RFP), and based on the responses, BQ energy was selected to move ahead with a wind farm at the Bethlehem Steel site, where the wind was deemed the best. Chris Pawenski, current coordinator of the Industrial Assistance Program at Erie County, and staff at the Department of Environment & Planning at the time helped me get an idea of county's thoughts. “Lots of different proposals were floated, a boat slip, marina, parks… the most obvious thing is extending the shoreline trail, there's an RFP out for that right now (Pawenski 2015).” The

county too, was somewhat disenchanted with the remediation of the site. When the redevelopment district was under Bethlehem Steel's control, the company had worked closely with the city, and were responsive to their needs. Since then, however, the site had changed hands multiple times and Tecumseh Redevelopment (the authority in charge of the site despite a variety of different owners) moved a bit more slowly on remediation than the county, and the city, would have liked. Still, they didn't anticipate many difficulties with it – there was a need to get something on it at the county and city levels in order to start receiving property taxes or some other revenue stream. From the county's perspective, the most difficult issue they had to overcome with getting the project developed came back to birds – there were concerns about the effect of wildlife. Fortunate, then, that WAG and Terry Yonker had that particular aspect well covered.

Perhaps most importantly, despite the push for wind energy through county level studies and things of that nature, there still seemed to be some confusion over how a wind project should be implemented. Yet, as Steel Winds became increasingly likely to move forward, both Paul Curran and Norm Polanski found the county becoming more responsive and receptive to the idea – overcoming their earlier confusion and becoming significantly invested in making sure it happened. Curran specifically notes that the staff was quite helpful, as the "civil servants worked more and more to make sure it got through (Curran 2015)."

This desire is evident when the county, through Mr. Pawenski, was on hand to answer Lackawanna council members questions when Polanski brought the PILOT program proposal to the city. The meeting covered a lot of the technical issues that residents and councilors had expressed concern over, from whether or not the ground could support the turbines (it could, and does), to questions about noise and how the turbines would interact with public plans for lake access (very little, and not at all) (Habuda 2005b). For the most part, this was the role the county fulfilled. They focused on providing advice and facilitation to the parties – and helped them navigate the complicated politics of the site itself, through multiple site owners and managers. For BQ, the county's help was well appreciated.

BQ Energy

The first thing of interest I learned about BQ was that it was born of a failure. The founder and manager of the company, Paul Curran, was a former conventional fuels man who had worked with Texaco and Chevron both at home and abroad at a variety of oil refineries. While at these locations he helped guide the creation of cogeneration facilities, and at one point, they almost were able to put up a wind farm. It was in this failure that Curran realized the utility of the spaces he was working with – large, relatively open industrial areas, generally located on coasts – were perfect for wind energy projects. As such, when BQ first came to Buffalo to see what kind of facilities the city boasted, they were looking

primarily at old oil refinery areas. “Neither of the sites we looked at were good for wind. But on the way back to the thruway, we passed by the Bethlehem Steel site, and thought hey, maybe this is something we can work with (Curran 2015).”

For BQ, the site was not a given. Both Lackawanna and BQ felt that though things did move relatively smoothly – there was a serious amount of inertia keeping the site empty. The “tail was wagging the dog (Curran 2015).” There was an idea that the site would be used for grander purpose – for an industrial park, a golf course (which Mr. Pawenski informs me was not a priority), a greenway – but the idea of siting a wind farm there, despite the work the county did with NYSERDA, was still something they were getting used to. There was a sense that every time they talked to the site's owners and the county, that there was something going on in the background. Given the site changed hands three times in five years, the feeling is perhaps understandable. It was in part because of this that they never took the project for granted, deciding instead to do everything they could to make sure it was approved. Though not mandated to under New York law, BQ also took the extra step of holding a number of different meetings and public hearings. “We gave around 15-20 presentations across the city, we met with sheriffs and firefighters… we met with every official we could find (Curran 2015).” It was at one of the project’s public hearings that the burger shop owner stood up and accused Norm of collusion; it was two years after the turbines were up and running that Curran ran into him at his shop.

BQ's caution, and its efforts to lay the best groundwork possible for Steel Winds was well justified. Early in BQ's relationship with the city, Curran explained to them the uniqueness of the site, and what it would mean. “Lackawanna really took a leap of faith with us. We'd never done anything like the Steel Winds project before then, and most wind farms in the state had been in rural areas. We told them that this would be the most visible wind farm in the country. Failure would be very obvious (Curran 2015).” Curran was not wrong. Steel Winds remains one of, if not the only, urban wind farm in North America. Indeed, despite a fair amount of searching, I have not been able to find another quite like it anywhere. It's quite possible that Steel Winds is the only one of its ilk in the world.

Chapter 4: Steel Winds in Context

Part 1: An Examination of How Steel Winds Moved Forward

In many respects, Steel Winds was developed and approved in an atmosphere that was unique to its time and situation, one that may be quite difficult to replicate. To better understand how the Wind Action Group, Erie County, BQ Energy and Lackawanna worked in concert to get the farm approved, it is necessary to move from historical fact to political theory – and the particularly salient concept of policy entrepreneurship.

One of the earlier examinations of policy entrepreneurship occurs in John Kingdon's *Agendas, Alternatives and Public Policies,* where the author is able, through hundreds of interviews with policy makers at all levels of government, to come to something of an understanding about how policy is formed. Or perhaps more accurately, who forms it. What Kingdon found was that quite apart from the traditional policy makers – the stereotypical bureaucrat, the outside groups and lobbyists working within the system to affect change without upsetting the status quo – the policy entrepreneur works instead to affect significant change that might indeed upset the status quo (Kingdon 2011; Mintrom and Phillipa 2009). Since Kingdon's original examination, further studies have expanded the definition of policy entrepreneur to include not just an individual; but rather, entire coalitions

of groups and individuals working towards a common purpose (Mintrom and Phillipa 2009). Not just any coalition can be referred to as an entrepreneurial coalition however. Mintrom and Phillipa's work on entrepreneurship and policy change provides a useful framework for examining what ultimately ends up going into a functional coalition; beginning with the ability to define a problem. Secondly, any coalition has to be able to call upon a network of policy professionals and knowledgeable allies; as well as work with, and understand the needs of related policy actors. Third, a coalition has to be able and effective team builders; and finally, a functional coalition is one that, as a group, is able to lead by example (Mintrom and Phillipa 2009). Looking closely at the efforts that went into getting Steel Winds approved, it is not difficult to see evidence of this policy entrepreneurship in action.

The Importance of Defining the Problem

One of the key ways of enabling policy change involves defining a specific problem, or set of problems. Without these, the status quo generally prevails – institutional inertia and established procedures and tactics would be regarded as enough to carry the day (Kingdon 2011). Though there are a variety of ways to argue that a problem exists, perhaps the most effective is that there is some sort of crisis at hand – manufactured or otherwise – that requires a drastic policy shift (Bouie 2015; Stone 2012). In the early 2000s in Erie county, the crisis was multi-fold. For Lackawanna and Buffalo, the loss of Bethlehem Steel, as well

as other manufacturing jobs had left a crater in the region's economy, both in terms of jobs and tax revenues (Goldman 2007). The Wind Action Group focused on a number of crises; extreme weather, which was tied to dirty, fossil fueled plants; high energy bills, health problems and American dependence on foreign oil and all its associated ills (Wind Action Group 2007). In many respects, the county is itself a steward of the region – so much so that Buffalo and Lackawanna's problems were just as much a concern at the county level. These three actors defined the problem – jobs, investment, and environmental ills. They also outlined a potential solution – wind energy.

There are other, ancillary benefits to defining the problem, however, something that is a little more subtle. Because these three actors had defined the problem already – there was little room for other, opposing definitions to gain traction. Many of the arguments that opponents used against wind turbines in the rest of the state fell flat in Lackawanna. One well known opponent's response to Steel Winds being sited in Lackawanna is particularly instructive, saying: “The site is at least an industrial site already… I'm still very concerned about the bird issue (Becker 2006).” Yet, even the worry about bird kills, the strongest argument against the farm and one that everyone I interviewed noted, failed to gain traction; in part due to the work of Terry Yonker and his pelagic bird study. Indeed, a survey of the Buffalo News from the formation of Green Gold in 1998 to the installation of the first turbines in Lackawanna reveals an organization in place,

and ready to respond to, wind power challenges. Each editorial, viewpoints feature or opinion piece against wind was almost immediately followed by one arguing for wind – often by WAG associated authors.

Network Building and Relationship Management

No coalition can operate in a vacuum, and most require some degree of coordination with others in order to get a specific policy goal advanced. Of the actors in the previous chapter; the relationships WAG, BQ Energy, Lackawanna and Erie County had with each other were all integral to the success of Steel Winds, even if those relationships were not immediately apparent to those outside the organizations. This was most clearly evident in the relationship that BQ Energy and WAG enjoyed. Though nominally project agnostic, by the time BQ got Steel Winds under way, WAG had spent years laying the groundwork for not only a wind farm, but, critically, one that best served the needs of the community. A think piece Nowak published in 2004 in the local alternative newspaper in his capacity as the Executive Director of the Green Gold Corporation, and Communications Committee Chair of the Wind Action Group is illustrative of just what the group was preparing the field for.

> "The stereotypical Buffalo politician or economic development official would wait for a deep-pocketed, international corporation to breeze into town. This company – let's call them Multinational MegaInc or MM for short – would then promise jobs while trawling for incentives from the taxpayers. Once the government ponies up, MM would put up some turbines with as little public input as possible, and suck the profits back to manufacturing plants and the MM corporate headquarters elsewhere (Nowak 2004)."

Among other topics, Nowak's piece touched on many of the different arguments that had been made in opposition to wind energy in the state for years. Getting briefly back to the question of definition – it was through this piece and others like it that WAG first introduced the region not only to wind energy, but the likely arguments they would hear against it, and how those arguments were not necessarily as valid as they might be portrayed. As for rapport however, WAG understood that the community – developer relationships that had turned toxic upstate had done so for a variety of reasons – the above paragraph indicative of some of these. The Wind Action Group was thus able to affect the terms on which any future developer agreements might be reached. There is some evidence to suggest this worked. As mentioned in the previous chapter, under New York law BQ Energy was not required to sit down with the public to discuss their plans for the wind farm. Despite the opportunity to avoid doing so, they instead held a multitude of meetings with stakeholders across the city. Likewise, rather than bring in their own mechanics and installation technicians, BQ instead used union labor, local to Lackawanna, to put the turbines up. This is in spite of the fact that the route to that particular decision left “much blood on the floor (Nowak 2007).” The choice to use local labor was one of particular importance, given who was involved. That was Mark Mitskovski, an early proponent of wind energy in the county and before Steel Winds, Erie County's Director of Energy Development

and Management. At the county, Mr. Mitskovski helped move the NYSERDA wind speed study forward, and became BQ Energy's project manager when Steel Winds was being developed. It was relationships like these that could have easily engendered a sense of impropriety. Instead, they worked very much to the project's, and region's, advantage, and likely had something to do with the use of union labor and BQ's outreach efforts. Both of these endeared them immensely to the locals – helping them avoid the characterizations of developers that had so far existed in the New York zeitgeist.

Relationships are two way streets, however, and BQ willingly availed themselves of WAG's expertise when necessary. It was to WAG that BQ sent people interested in learning more about the effects, promise and perils of wind farm development – people who were not necessarily inclined to take BQ Energy at their word. Mr. Curran notes this, saying “WAG became an arbiter of information... they got the community smarter about what wind energy would be (Curran 2015).”

Likewise, all three actors had contacts and relationships at the county that they were able to use to push wind energy. Lackawanna vociferously fought for investment on the site, with the county providing facilitation and expertise where appropriate. Likewise, BQ relied upon the county to help them navigate the politics of the site; just as WAG took the county's wind speed study and ran with it – developing siting guidelines, messaging, and sketching out what the best

possible deal would look like.

Building Teams

While the networking aspect of policy entrepreneurship is undoubtedly essential, any gains that might be realized through coalition forming could have very well been undone if the organizations themselves were not already made up of teams that work well together. Having covered this quite significantly in the previous chapters, it is nevertheless worthwhile to understand just how well the different teams were positioned. For WAG, the expertise evident in the organization was a major reason as to why they were able to function as effectively as they did. With engineers, lawyers, government officials, legislative aids and scholars numbered as part of their team, WAG was able to call upon different constituencies as necessary in order to support their work. Moreover, they were very much all on the same page with regards to wind energy and its benefits. Hearing from Derek Bateman, Bill Nowak and Terry Yonker, it was clear that WAG did not have any internal dynamics that would have negatively affected their ability to advocate on behalf of wind. Indeed, as has been mentioned previously, the only concern that did come up was that avian deaths were not being properly accounted for. It's a testament to WAG and the team there that they were able to incorporate these concerns into their overall messaging.

Just as WAG was unified in bringing wind to Western New York, so too were both Lackawanna and the county, even if they needed something of a push

to get on the same schedule. Just as my contacts in WAG indicated that there was little that divided them, so too did my interviews with city and county officials. Indeed, everyone I talked to; Chris Pawenski, Norman Polanski and Ralph Miranda indicated that the project was rather simple to get developed and approved – institutionally, there was little pushback.

Leading By Example

A final, critical feature of policy entrepreneurship is leading by example. Change is often not easy – it requires specific circumstances and individuals interested in making it happen – and perhaps more importantly, it requires policy makers to understand that they may not be taking as much of a risk as they thought they were. A useful concept for examining how politicians and political actors define risk can be found in the "Overton window," a political framework developed by the late Joseph Overton of the Mackinac Center. Roughly speaking, the Overton window is a definition of what's possible, policy wise, at any given time.

> "Imagine, if you will, a yardstick standing on end. On either end are the extreme policy actions for any political issue. Between the ends lie all gradations of policy from one extreme to the other. The yardstick represents the full political spectrum for a particular issue. The essence of the Overton window is that only a portion of this policy spectrum is within the realm of the politically possible at any time (Russell 2006)."

As BQ's Mr. Curran notes, there was definitely a risk in taking on the Steel Winds project (Curran 2015). Yet it was one that Lackawanna, and by extension,

the county, were glad to take on. More importantly, the solution that they both identified was made feasible in part by the ground work and leadership laid by Green Gold and WAG – politicians of all stripes, Democrats and Republicans, were willing to put their names to the project – and did so. For Western New York, wind energy was well encompassed by the Overton window at the time.

Part 2: Why Steel Winds Was Approved

At this point, it is indisputable that Steel Winds was, and is, a success. Before Steel Winds, there had never been a wind farm approved on a brownfield before, much less a brownfield in an urban area. The coalition changed that. By working with local groups and politicians, they were able to push the Bethlehem Steel site to open for wind energy redevelopment, and shepherd it through the EPA, DEC and SEQR processes. Additionally, the coalition – through tabling, presentations, events and articles, was able articulate to Lackawanna and its population the clear advantages of the city hosting a wind farm. Moreover, through this effort, they were able to turn what could have been a risky venture into an exercise that ensured development would be possible. By expediting the removal of the 30 acres of land on the Bethlehem Steel site from the federal government's RCRA program, and under Mayor Polanski, putting in place provisions in the city's zoning that would allow further wind turbines to go up, they signaled to the developer that the city and county were there to support them. Perhaps most critically, the coalition made it clear in no uncertain terms that there

would be a path forward for development. Despite the difficulties facing other farms in the state and the opposition that cropped up to almost every project, no such problems evidenced themselves in Lackawanna. Instead, the very clear priorities and planning that went into developing the Steel Winds project likely played a role in dissuading opponents from taking on the development.

These weren't the only signals the city sent to potential opponents. Siting, too, allowed the project to avoid a significant amount of the problems and concerns that plagued more rural farms. For those concerned about the potential noise and negative health effects of wind turbine developments, there was little chance that noise created by Steel Winds would carry over into Lackawanna's residential areas. That is to say, any noise that is made by the turbines is simply subsumed into the general background noise of the site and city itself. Along these lines, Steel Winds dodged one of the most potent arguments against wind energy in New York – that of values. Indeed, Steel Winds sidestepped the argument entirely by locating 'industrial' wind turbines on an industrial site. The difficulty of attacking this is no more clear than in the instance, mentioned above, where one of New York's most prominent wind energy opponents conceded of the Lackawanna project, “at least it's on an industrial site already (Becker 2006).” In an effort to create successful community – renewable energy developer relationships then, this case study suggests urban sited wind turbines might be a good place to start.

In order to wrap all of these thesis chapters together, I'd like to put them in a context that may be familiar to those that follow the political process. Without a specific understanding of what would work, or how to do it, WAG, the county, Lackawanna and BQ became partners in a campaign to get a wind farm approved and operating in the Western New York region. This was made clear in a call I made to Mr. Nowak before the idea of the thesis gelled for me – and indeed, it was his comment that helped crystallize why Lackawanna was so interesting to me. “We had no idea what would work, what would attract a developer. We threw everything at the wall in the hope that something would stick. If we had had some guidance, we would have loved it (Nowak 2015).”

In the face of a difficult environment for wind developers statewide, WAG helped introduce, and then controlled, the narrative of and around wind energy in the region. With the local and county governments on board, WAG helped define the issue so completely that the pockets of resistance that had cropped up elsewhere in the state were not able to gain a footing in Lackawanna. The dynamic evident here was lacking in many municipalities, where the developer would often go it alone. In Sardinia, for example, the narrative was so effectively controlled by oppositional voices – with town administrative officials onside – that the developer abandoned the site in search of greener pastures upstate (Ploetz 2005; Ploetz 2007).

Ultimately, it was these policy entrepreneurs that helped get Steel Winds

approved. The coalition that was developed and nurtured for five years before BQ's application helped ensure that once the opportunity for change was there, politicians could seize on it without cost.

The relationship between Lackawanna and BQ continues to this day. Returning to the site in 2014, BQ is currently building Steel Sun – a 4 MW solar project, another first for Lackawanna and the world. As Mr. Curran notes, “Steel Sun is one of the first projects in the world that will have utility-scale solar and wind at the same site. It's very unusual… Lackawanna is the first site to go big (Kwiatkowski Radlich 2014).” Indeed, Lackawanna was so enamored of their turbines that Mayor Syzmanski broached the question of a partnership with BQ on the solar plant as well, which BQ was only too happy to grant.

Chapter 5: Discussion, Recommendations and Conclusion

Part 1: Discussion

Though the coalition developed to promote wind resource use in western New York proved quite effective in getting a project sited and approved, since around 2008, the coalition has drifted apart. In Lackawanna, the 'green' mantle has

been taken up by current Mayor of Lackawanna, Geoffrey Syzmankis, who oversaw the building of the second phase of Steel Winds and the current Steel Sun project. At the county level, however, after the approval and development of Steel Winds, it was not until 2014 that another project (Steel Sun) wound its way through to a proposal and development, not coincidentally on the same Bethlehem Steel site (Kwiatkowski Radlich 2014). Just as Lackawanna and the county have more or less moved on, so too has WAG. Though WAG's resource center remains online, for the most part a significant amount of its operations have either ended, or been subsumed into the Sierra Club of western New York. The group will still occasionally give presentations, but a lot of the energy that had been going into the effort has been lost (Bateman 2015).

This is both good and bad. On the one hand, it's good largely because the concept of renewable energy has become so intertwined with the region's identity that it will be difficult for even a highly

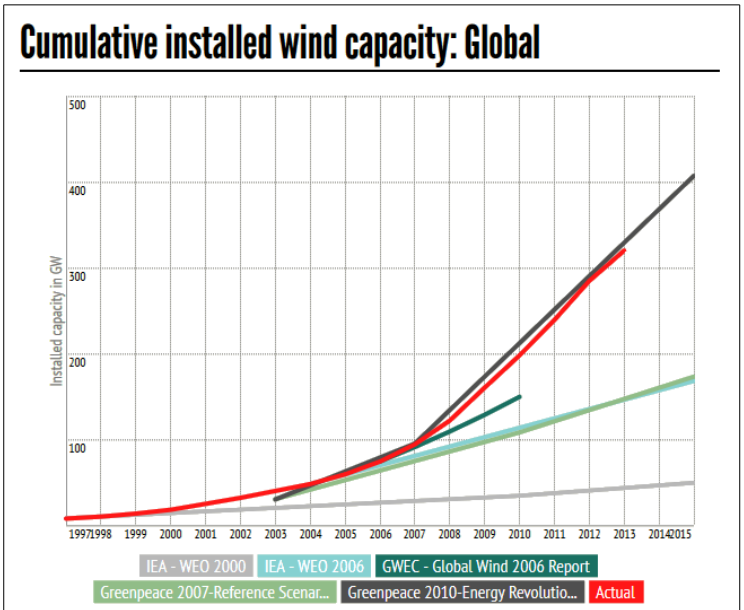

Figure 6: Cumulative Installed Wind Capacity (Lazard 2015)

motivated outside group to dislodge its gains. Just as Mayor Polanski wanted, the turbines of Steel Winds have become a beacon – they define the area. Likewise, Solar City will soon be opening a massive factory dedicated towards the production of their solar panels on some of South Buffalo's older industrial lands, just north of Lackawanna (Robinson 2014). It seems then, that Green Gold's goals of developing Buffalo into something of a 'green' silicon valley are slowly coming to fruition.

On the other hand, both Bob Ciesielski, Chapter head of Sierra Club of western New York, and Derek Bateman recognized that advocates missed the boat on offshore energy in the Lakes (Ciesielski 2015; Bateman 2015). “The campaign against offshore wind has been pretty effective, it's basically been killed in New York state (Bateman 2015).”

On Offshore Wind

With some of the longest freshwater coasts in North America; New York was, and remains, well positioned to exploit freshwater offshore wind farms. That is to say, if they were ever able to get the projects off the ground. The last attempt came in 2009, when the New York Power Authority (NYPA) (the state owned public power generator and transmission operator) solicited a number of different bids from developers to get a feel for how much the project would cost (NYPA 2009). In 2011, NYPA canceled the project, citing the $60-100 million subsidy it determined would be needed to be profitable for the developers, a sum that would

not have been fiscally responsible for the state to pay (DiSavino 2011). However, there were other hurdles. Terry Yonker notes that for the NYPA project, there was a very well organized shoreline opposition, which NYPA; “did a terrible job with not sitting down with local people at the outset of the project to get them to understand what it was all about (Yonker 2015).” Moreover, it sparked opposition in one particular state senator, George Maziarz. Hailing from Newfane NY, Maziarz brought a lot of negative attention to the project by heading up freedom of information requests on the different proposals, holding meetings, and generally becoming the face of opposition to freshwater wind turbines (Maziarz 2010; Prohaska 2010). In time, New York moved on to potentially greener pastures, leaving the lakes to focus on ocean wind development (Ciesielski 2015).

On Further Challenges and Astro-Turfing

Just as offshore wind has become controversial, so has onshore wind, even more so than it had been in the early 2000s. For all the reasons cited in Chapter 1, wind has become an increasing target of organized opposition – and for one simple reason. Wind is now more of a threat than most fossil fuel generators ever thought it would be. One needs only to look at wind and solar grid penetration projections made in the early 2000s to understand just how far off they were. Indeed, one of the most well respected energy agencies in the world, the International Energy Agency, put out projections for renewables in 2000 and 2006 that significantly underestimated actual penetration (Fig. 6)(Lazard 2015). The

only organization that got anywhere close to actual deployment was Greenpeace, and even then their solar penetration model was biased low (Fig. 7)(Lazard 2015).

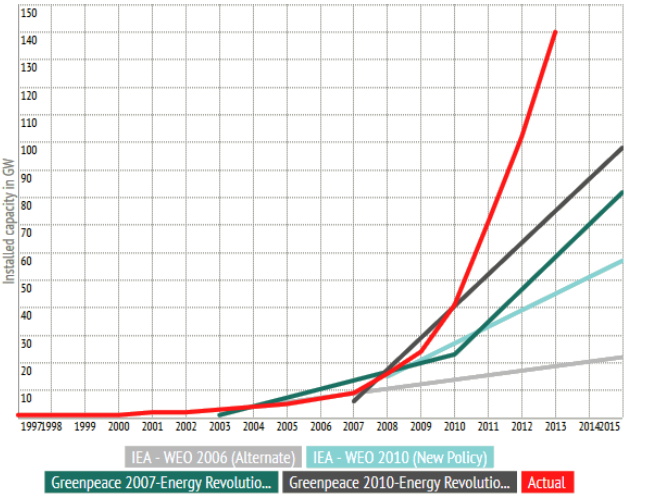

Figure 7: Cumulative Solar Capacity (Lazard 2015)

In New York, it was in regards to offshore wind that the Wind Action Group felt they had been outflanked (Bateman 2015; Nowak 2015). Working with local politicians, the anti-offshore wind group benefited from a home grown campaign, and was able to field a significant degree of opposition to opening up the lakes for offshore wind development. Though it is not clear that New York's opposition is being supported by fossil fuel generators, over the whole of the United States, such localized opposition has become increasingly supported by corporate astro-turfing groups. Deborah Stone observes this in *Policy Paradox*, where she notes "that one of the chief strategies for an accused "special interest" to appear public-spirited is to disaggregate itself (Stone 2012)." Rather than reactive disaggregation however, current renewables opponents have taken the next step. They have created an active web of think tanks, policy shops

and 'grassroots' opposition, all in an effort to give their policy priorities a veneer of authenticity (Redden 2015; Robbins and Seifter 2015; Lipton 2014; Adler 2015).

Most recently, an organized opposition group has begun to make its presence known in Niagara County, just north of Erie County. Save Ontario Shores has established itself as opposition to APEX Wind Energy's wind farm proposal in Somerset, NY – and is currently working to turn the community against wind. Indicative of this strategy, on April 5, 2015; the group published a half page advertisement in the Buffalo News decrying wind for all the traditional arguments – higher energy prices, bird kills, etc., while promoting an 'educational event' (Save Ontario Shores 2015). While there is a Sierra Club organizer in the area, there is currently no organized educational and advocacy instrument akin to WAG on the ground.

Part 2: Recommendations

For those interested in renewable energy, there are four key takeaways that I believe helped shepherd the Steel Winds project along. It was not enough for the Steel Winds campaign to work with only one or two of these suggestions – instead, it is the combination of all four that made the western New York campaign effective.

1. *There was a Diverse and Knowledgeable Coalition*. One of the big successes of WAG, and the movement to turn Buffalo green more

generally, was that the groups that were promoting the transformation were made up of members of the community from all walks of life, position and expertise. The coalition succeeded in getting wind (and later, solar) approved in the region because they had; engineers who were well versed in the technical specifics of the operations of wind, lawyers who understood the siting issues that might present themselves to interested communities; and finally, politicians, activists and business people that took time out of their days to advocate on the benefits of wind and other renewable energy generation. The groups availed themselves of these experts as necessary, and were able to answer questions knowledgeably on the varied subjects put to them.

2. *Honest Broker Status.* Another of WAG's successes was that they set themselves up as honest brokers – they did not take money from BQ, Lackawanna or the county, the only money they did get was a Public Opportunity Grant from NYSERDA (Nowak 2015). They established themselves as a knowledgeable organization that had the needs of their community foremost in their minds. This is of critical importance, as can be seen in Cape Vincent. A small town in New York on the coast of Lake Ontario, the appearance of impropriety in their pro-wind group helped fracture the community, miring a local wind energy project in controversy and helping, ultimately, to lead to its cancellation in 2014 (7 News 2014;

Hirschey et al. 2014).

3. *Public Presence*. Like any other campaign, it is important that any coalition makes its presence well known. Through radio shows, op-eds, local news programs, newspapers and events; exposure to the public is essential to getting a message across. Message discipline and overall responsiveness to potential arguments helped as well. When opponents published op-eds against wind, WAG was there to correct misperceptions and direct interested parties to appropriate, and factually accurate, resources. Moreover, the public presence of the various organizations helped convey the nature of the project.
4. *Addressed the Community's Needs.* BQ Energy was conspicuous in their desire to respond to the community's needs, and BQ's strategy appeared to very much informed by WAG's earlier efforts to define those needs. Hurt hard by job loss, BQ's decision to use union labor fit well into the mold WAG had established. For Lackawanna, and WAG, focusing solely on national goals – reducing greenhouse gasses, transitioning from fossil fueled generation, or even just lease agreements; is one that starts off as an answer in search of a question. Steel Winds succeeded in part because it was positioned to address specific community concerns. This local focus went further than Lackawanna as well, as evident in a shift Paul Curran suggested happened in BQ. When they first started the organization, “we

looked for liberal, green energy guys that would favor renewable energy development. Later though, we began to focus more on accommodating cities or municipalities (Curran 2015).”

Part 3: Conclusion and Recommendations for Future Study

If there's one thing I've learned from this thesis, it is that relationships are complicated. I began this study with the intent of determining what a successful community – renewable energy developer relationship would look like, how it forms and prospers. Choosing Steel Winds was natural for me. Growing up in Buffalo, the turbines have become a fascinating and beautiful part of our shoreline – they are beacons of a future that only 25 years ago seemed far away and unreachable. Perhaps most importantly, they've restored, in some small measure, Lackawanna's community pride. They feature prominently on the city's website, and have a video devoted solely to the story of their development (*Lackawanna, NY: Wind Powers a Town's Rebirth* 2011). You can certainly hear the pride in Mayor Polanski's voice when he talks about them. Indeed, for some in the city, the groundbreaking ceremony was the first time they had ever seen Lake Erie from their own shore – an opportunity that many reveled in (Curran 2015). Given community – developer relationships across the state at the time, it was not a given that BQ and Lackawanna would get along so well. It is a testament to the work that all parties; the county, WAG, Lackawanna and BQ put into that relationship that it remains a shining example of what to do right.

Since then, however, the ground has changed. Many more developers are focused primarily on solar – even BQ has transitioned out of wind for the most part. Likewise, community relationships have changed. Where Lackawanna was a big deal, for both BQ and the city; one of BQ's later projects in Greenfield, Massachusetts went in without too much trouble. As Paul says, “It's less of a fascinating thing, now (Curran 2015).”

Still, big projects will provoke opposition – and though wind and solar have different weaknesses, its likely only a matter of time until utility scale solar comes into the cross-hairs. Thus, I have three recommendations for future researchers – for one, work to understand the relationships large scale solar developers might have with a community. Do they evidence similar coalition building as did the groups in western New York? Or is some other dynamic at work? Secondly, try to determine if the successes of other, utility scale projects were because of the developers' ability to convey a clear message to the community as a whole that the proposed project was in their best interest. Lastly, it would be very interesting to see if a coalition, such as the one identified throughout this thesis, would be an effective, real-time foil for astro-turfing groups as described above. The coalition in Lackawanna had the benefit of forming before significant opposition could develop – it is an open question as to whether such a coalition strategy would be effective in the face of both outside money and paid opposition.

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Appendix A – Interview Instrument

Housekeeping questions for all interviewees:

- What is the primary mission of your organization, as well as its primary constituency? **For Communities**: If your primary mission is to promote renewables, how did you do it – by focusing on shifting demand or bringing in developers?
- How did [organization] come to focus on renewable energy?
- What role did your organization play in developing renewable energy?
- How important to your organization was it that this was a renewable energy project, over some other development?

Questions for Communities / Community Members and Organizations:

- What was your organization's specific goal?
- Once you settled on a particular goal, what was your process to get there? Did you seek out allies? Or focus internally on getting your constituents/members to push for a certain outcome?
- What specific activities did you undertake to get to your goal?
- What kind of outreach did you undertake to get there? Did you reach the people you tried to / communicate the message you wanted to get across? Were you able to build on this outreach? If you were to do this over, would you do anything differently?
- What kind of resources did your organization use in attracting renewable energy developers? (Volunteers, general funds, advertising, pro-bono or paid academics or lawyers?)
- What problems did you encounter while pushing for renewable energy, internal to your organization / external to your organization? How did you overcome or work around them?
- Was there a 'tipping point,' where the decision to pursue renewable energy was made, and could it have gone the other way – and if so, what put it over the edge? An individual, group, policy or luck? **Depending on interviewee:** was there a point at which you realized that things were going the way you wanted them to?
- What were the key elements of your success?
- What, if anything, had to change in the way [organization] worked in order to pursue renewable energy (policies, regulations, etc.?)

Questions for Developers:
I would like to now inquire about how [developer] makes their siting decision:

- Could you walk me through the basic process of how [developer] chooses to investigate a site for a potential development? What drive's [developer]'s decisions – power potential? Grid connection? Policies? Etc.?
- Among communities, individual landholders and developers, who approached whom? Does the process change based on circumstances and local context, or is it applied uniformly? What is the 'perfect' outcome of these interactions?
- Did you think you had community support when you approached the municipality? In general, when you do development, is community support an important factor in your decision making?
- Outside of these case studies, have any groups/individuals approached [developer] in an effort to develop renewable potential without the traditional RFP? What form did that take – what did they ask?
- For [developer], what makes a community attractive, and what are some deal breakers? How willing is [developer] to modify agreements?

Appendix B – Interviewees

Interview Methodology

In order to determine who to talk to for this thesis, I first reached out to individuals and people that I knew in the Buffalo area who had been part of the Wind Action Group. From these individuals, I used snowball sampling to get in touch with others who participated in the decision making process, at all levels in western New York.

Interviewees

- **Bill Nowak**
    - Mr. Nowak is the current executive director of the New York Geothermal Energy Organization, an industry trade organization. He was also a founding member of both the Green Gold Development Corporation and the Wind Action Group. He also runs the Sierra Club writing group, which disseminates information about climate change and renewables, as well as responds to climate deniers in the local newspaper.
- **Bob Ciesielski**
    - Mr. Ciesielski is the Energy Committee chair of the Sierra Club's Atlantic Chapter and Niagara group. He has been involved in the Sierra Club of western New York since the early 2000s, and is an Attorney by trade.
- **Chris Pawenski**
    - Mr. Pawenski is the current Coordinator of Industrial Assistance at Erie County. During the Steel Winds approval process, he worked as staff on the Steel Winds file.
- **Derek Bateman**
    - Derek Bateman is currently an instructor at Erie Community College, as well as current communications chair of the Wind Action Group. He

has been involved in energy in the region for many years, and for a time worked at the Lake Effect Energy Corporation, an attempt to get a cooperatively owned wind turbine built in the Great Lakes region.

- **Norman Polanski**
    - Mr. Polanski was the mayor of Lackawanna from 2004-2012, and was instrumental in getting Steel Winds approved. He was a big advocate for the project once it was pitched to him, and worked with the county and residents throughout the City of Lackawanna to build support for it's approval
- **Paul Curran**
    - Mr. Curran is the founder and managing director at BQ Energy llc., a renewable energy development corporation that focuses on developing wind and solar power plants on brownfields and other former and operating industrial landscapes. He was directly involved with the decision to site Steel Winds on the Bethlehem Steel site.
- **Ralph Miranda**
    - Mr. Miranda worked under Mayor Polanski on the Planning board, and helped shepherd Steel Winds through the approval process in the city.
- **Terry Yonker**
    - Mr. Yonker is the head of the Energy and Climate Change Working group at GrowWNY, a local community development organization. He has been a member of the Audobon Society, and was a part of WAG during the Steel Winds process. He also did the bird kill study for BQ energy, and has done a variety of other bird kills studies for the region.

Appendix C – Actors

- **BQ Energy llc.**
    - BQ Energy is a renewable energy development firm founded in 2002, specifically to develop renewable energy projects on brownfield sites. They have worked internationally, but have focused primarily on projects in the United States. They have recently shifted their focus to primarily work on solar projects. Steel Winds was one of their first projects (BQ Energy 2015).
- **City of Buffalo**
    - The City of Buffalo is the second largest city in New York State (hence the “Queen City” moniker), and is its own administrative entity. It features a Mayoral and Common Council system of government, with a Councilor for each of the city's nine districts. Buffalo and Lackawanna are very close, economically, politically, and physically; such that Buffalo, Lackawanna, and the assorted suburbs make up the densest part of western New York. Buffalo's current population (circa 2010) rests at 261,310 (30.7% below poverty line) – and has been falling since the 1960s from around 500k (U. S. Census Bureau 2015a).
- **City of Lackawanna**
    - The City of Lackawanna is a distinct administrative entity on the shore of Lake Erie, just south of Buffalo, New York. Like Buffalo, Lackawanna features a Mayoral and City Council system, with a member for each of the city's wards (districts). In 2010, Lackawanna's population was reported as 18,141, of which 23.2% were below the poverty line (U. S. Census Bureau 2015c).
- **Erie County**
    - Erie County is one of the largest counties in the state of New York outside the boroughs of New York city (with a population of 919,040), and includes both the cities of Buffalo and Lackawanna. The county is

governed by the County Executive, who works with the county legislature to set governing priorities. For Steel Winds, the county had little input in the permitting of the project, but provided expertise and assistance to its municipalities where and when necessary (U. S. Census Bureau 2015b).

- **Green Gold Development Corporation (GGDC)**
    - The Green Gold Development Corporation was formed in 1998 based around the idea that Buffalo could become a “green” silicon valley. Created by then Buffalo Common Council President James Pitts, the GGDC featured a slate of 14 board of directors, as well as 40+ participating businesses. Green Gold held events, a conference and meetings in an effort to connect business leaders, politicians and activists. This was in service of the goal to develop a more environmentally responsible business climate in western New York, as well as attract white collar jobs and workers (Green Gold 2003).
- **Wind Action Group**
    - The Wind Action Group was formed after (and out of) the Green Gold Conference in 2001, and first acquires an online presence in 2003 on the Green Gold website. The Wind Action Group featured nine chairmen and women, with openings for volunteers as needed. Their goal was to get a wind project approved in the City of Buffalo, and they, “work[ed] to accelerate the pace of wind development locally in order to capture wind-related manufacturing and service sector spin off jobs (Wind Action Group 2004).”