Estimated Annual Community Financial Impact for the Proposed *Encumbrance Wind* Project

Subject	Comments	Annual Income/Cost	References
Encumbrance Wind	We are accepting the community benefits claimed by the wind developer at face value — even though none are guaranteed.	**+ $2± Million** This is from property taxes, lease payments, misc. employment, etc.	
Property Values	• This is a major Property Rights issue. The Town has the obligation to fully protect what is likely its citizens most valuable financial asset. • Due to negative visual impact, residential property value will decline within at least a two mile radius of the project site. • As local property tax revenue is lowered due to lost home values, ALL local property owners will end up paying a higher property tax **rate**. • Some property abandonment has happened in other areas.	**— $.6± Million** *Note 1:* Based on 850± homes within 2± miles of wind project. *Note 2:* Average home value in Anytown is $140,000±. *Note 3:* Assumes low-end value loss (10%± = $14,000±/ home). *Note 4:* Total property value loss: 850± x $14k± = $12±M *Note 5:* Annual loss (averaged over 20± year life of project): $12±M / 20± = $.6± M	1-5
Agriculture Losses Due to Bats	• It is well-documented that turbines can kill large numbers of bats. • The main solution the wind industry has is to shut off turbines. • Bats are prodigious insect eaters. An individual bat can consume 1000± insects an hour. • When wind turbines come to a community, the bat population takes a substantial hit. • Decreased bat population means many more insects, which results in a decrease in crop yields.	**— $2.6± Million** *Note 1:* Bats can travel 100± miles a day, and 10± miles from a wind project site. *Note 2:* A 10 mile radius from the project site (+ site itself) equals roughly 1/3 of our county area. *Note 3:* Take mid-range county impact and 80% due to turbines (Reference #7). *Note 4:* Approximate annual loss: $9.8±M x 80%± x 33%± = $2.6±M	6-10
Agricultural Losses Due to Local Weather Changes	• Industrial wind turbines can alter the weather up to 14± miles away. • Temperature and humidity can be adversely affected. • Temperature and humidity changes can lower crop yields.	**— $.1± Million** *Note:* There are no good numbers for this type of loss (as the NYS Dept. of Agriculture has not monitored or studied this), so this is a low, rough estimate.	11-15
Tourism	• Multiple studies indicate that tourism can decrease in communities with visible industrial wind turbines (esp those that are vacation destinations). • A very applicable survey was done by NC State University — as they are highly pro-wind. Their results were that 80%± of tourists would not come back to where turbines are visible.	**— $4.4± Million** *Note 1:* Per the State, our county tourism is $45± Million/year. *Note 2:* 33%+ of the county will see these tall wind turbines. *Note 3:* A very low impact of only 30% (*vs* 80%) is assumed. *Note 4:* Estimated Annual loss: $45±M x 33% x 30% = $4.4± M	16-20

Subject	Comments	Annual Income/Cost	References
Adverse Health Effects	• The World Health Organization has gone on record saying that the effects of infrasound can be much worse than those of audible noise. • Some impacts of infrasound and shadow flicker are: cardiac effects, anxiety, sleep disturbances, mental and emotional health decline, etc. • Studies show that these impacts can result in an inability to perform daily tasks, compromised quality of life, and an increased risk of suicide.	**— $.2± Million** *Note 1:* Not everyone is affected the same way by these health problems — just like not all smokers get cancer. *Note 2:* Human health is priceless, so there is no accurate way to give the full value of wind turbine caused human ailments. As a result, a very low, rough estimate was made.	21-30
Hydrogeological Impacts (Drinking water and wells)	• Turbine base excavation (which can be over 40 feet deep), and related project construction, has been shown to put water wells at risk. • Some communities have experienced dramatic or yet-to-be reversed damage including sediment and contaminants in ground water. • Risk of well water loss, can result in the additional cost to connect more residents to town water. • These seriousness of these issues depends on local aquifer depth, soil percolation, etc.	**— $.1± Million** *Note:* There are no hard numbers for this type of loss as it is a very localized matter (i.e. dependent on local hydro-geological conditions, quantity of private wells, depth of private and community wells, etc.). This is a conservative, approximate estimate.	31-35
Ecological impacts, e.g.: **Wildlife** **Ecosystems**	• Disruption of wildlife (birds, deer, bears, etc.) habitats due to road, power line, etc. fragmentation. • Displacement of animals (e.g. due to tree removal). • Direct negative impact to organisms' environment. • Increased parasitic infections in certain populations (e.g. raccoon). • Permanent soil erosion can impact local species. • A single significant change in an ecosystem can result is a chain reaction that can be irreversible.	**— $.2± Million** *Note:* This amount of this loss is very dependent on the local terrain, degree of forestation, bodies of water, etc. Since no study has been done locally, this is a low, rough estimate.	36-40
Miscellaneous, e.g.: **Agricultural (misc.)** **Livestock** **Hunting** **Communication** **Military** **Leaseholders**	• Loss of employment plus less seed and equipment, etc., purchases due to reduced farming operations. • Reduction of pollinating insects. • A variety of livestock ailments. • Hunting restrictions and reduced available wildlife. • EMS & communication expenses. • Losses to turbine leaseholders.	**— $.3± Million** *Note:* This is an approximate low estimate of the financial consequences of several other possible negative results of this industrial wind project.	41-50
NET TOTAL	**Community Net Amount.**	**— $6.5± Million per Year**	

The *Encumbrance Wind* Project's NET Annual Community Economic Impact:

An Annual LOSS of $6.5± Million

The primary rationale for the Anytown Town Board's current support of the proposed Encumbrance industrial wind project, is that the developer claimed that this would be a financial windfall to our community.

Clearly such an assertion is self-serving. The only way the Town can make an **informed decision** about the community economics for this wind project, is to fully assess ALL of its local financial **pros** *and* **cons**.

In other words, it is the Anytown Town Board's responsibility to perform an **objective** and **comprehensive** assessment of ALL potential economic impacts to the entire community — *before* giving any approvals to this complex, long-term project. To date, no such assessment has been performed by the Town

We would hope that such information would be readily available from State agencies. For example, the Dept. of Health should be monitoring wind turbine health effects on State citizens. Similarly for the Departments of Agriculture, Tourism, etc. But for political reasons, no State agency is keeping such data.

Since our local, county and state representatives are not providing this information, this is why concerned citizens have prepared this ballpark analysis.

The estimates presented above are supported by the 50± sample studies and reports referenced below. Note that those are typically from **independent experts** — as compared to the material frequently cited by the wind industry. (Additional references on any of the above mentioned issues, are available on request. A superior website to do additional research, is WiseEnergy.org.)

Please contact *Concerned Neighbors of Anytown* (at SaveAnytown.com) for any questions, or to submit well-documented corrections, or to support a balanced economic assessment of this exceptionally important community matter.

Sample References for Some Wind Energy Local Economic Impacts

Property Values —

1. <http://wiseenergy.org/Energy/Wind_Economics/Clarkson_Henderson_PV_Study.pdf>
2. <http://www.spatialeconomics.ac.uk/textonly/SERC/publications/download/sercdp0159.pdf>
3. <https://tinyurl.com/y6cx2k7q>
4. <https://tinyurl.com/y4nhhcq6>
5. <http://wiseenergy.org/Energy/Wind_Ordinance/REValues.pdf> (Collection of studies, etc.)

Agriculture and Bats —

6. <http://wiseenergy.org/Energy/Wind_Economics/Bats_and_Agriculture.pdf>
7. <http://wiseenergy.org/Energy/Bat_County_Data.pdf>
8. <https://www.dec.ny.gov/docs/administration_pdf/batsofny.pdf>
9. <https://academic.oup.com/jmammal/article/94/2/506/914006>
10. <http://wiseenergy.org/Energy/Wind_Economics/Bats_and_Turbines.pdf> (Collection of studies, etc.)

Agriculture and Local Weather —

11. <https://www.sciencedirect.com/science/article/pii/S0167610510001467>
12. <https://www.nature.com/articles/nclimate1505>
13. <http://www.co2science.org/articles/V20/aug/a17.php>
14. <http://www.atmos.albany.edu/facstaff/mathias/pubs/Slawsky_et_al_2015.pdf>
15. <http://iopscience.iop.org/article/10.1088/1748-9326/11/4/044024/>

Tourism —

16. <http://wiseenergy.org/Energy/NY/NYS_Tourism_Data_2017.pdf>
17. <https://cenrep.ncsu.edu/2016/04/03/offshore-wind-tourism/>
18. <https://www.sciencedirect.com/science/article/pii/S0301421515300495>
19. <https://tinyurl.com/y5tx4vr9>
20. <http://wiseenergy.org/Energy/Wind_Economics/Tourism.pdf> (Collection of studies, etc.)

Human Health —

21. <https://asa.scitation.org/doi/pdf/10.1121/2.0000653>
22. <https://file.scirp.org/pdf/OALibJ_2018122013570614.pdf>
23. <https://tinyurl.com/y2huzqgs>
24. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3653647/>
25. <https://www.intechopen.com/books/acoustics-of-materials/acoustics-and-biological-structures>
26. <https://docs.wind-watch.org/Zou-suicide-2017-Oct.pdf>
27. <http://www.waziristan-calc.igsz.de/infra/Weichb_2017.pdf>
28. <http://www.epaw.org/documents/Wind_Turbine_Noise_Sleep_Health.pdf>
29. <https://puc.sd.gov/commission/dockets/electric/2018/EL18-026/prefiledexhibits/davenport/i32.pdf>
30. <http://wiseenergy.org/Energy/Health/Sample_Wind_Noise_Studies.pdf> (Collection of studies, etc.)

Hydro-geological **—**

31. <https://tinyurl.com/z2sbyrs>
32. <http://www.windconcernsontario.ca/wind-turbines-to-blame-for-well-water-problems-hydrogeologist>
33. <http://windeis.anl.gov/documents/fpeis/maintext/vol1/vol1ch5.pdf>
34. <https://www.wind-watch.org/news/2017/02/22/could-wind-turbines-taint-area-aquifer>
35. <https://tinyurl.com/yyb2g9ek>

Ecological **—**

36. <https://www.nap.edu/read/11935/chapter/5>
37. <https://wcfn.org/2016/10/02/wind-turbines-effects-on-animals/>
38. <https://www.spectator.co.uk/2013/01/wind-farms-vs-wildlife/>
39. <https://wildlife.org/wp-content/uploads/2014/05/Wind07-2.pdf> (Collection of studies, etc.)
40. <http://npshistory.com/publications/sound/wildlife-noise-bibliography.pdf> (Collection)

Miscellaneous **–**

41. < http://wiseenergy.org/Energy/Wind_Other/Wind&Hunting.pdf> (Collection of studies, etc.)
42. <http://wiseenergy.org/Energy/Wind_Other/Wind_Energy_Communication_Interference.pdf>
43. <https://www.mprnews.org/story/2009/10/15/reimer>
44. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5846843/>
45. <https://www.ncbi.nlm.nih.gov/pubmed/24597302>
46. <https://canadafreepress.com/article/open-letter-windfarms-and-animals-e.g.-birth-defects>
47. <https://greenliving.lovetoknow.com/environmental-issues/effects-clear-cutting>
48. <http://wiseenergy.org/Energy/Military/Military-Wind_Overview.pdf>
49. <http://swkroa.com/docs/wind_energy_speech_6.pdf>
50. <http://docs.wind-watch.org/CALT-Legal-Brief-Wind-Energy-Production.pdf>

Revision 6-4-19

Explanatory Comments:

Any group defending citizen's rights is welcome to edit and use this document. This report is based on Wind Energy: Local Economics 101 — so make sure to study that very closely.

The material above the line is intended to be sent to local legislators, and to also be widely distributed to the public and media (*after the local numbers and any other appropriate local editing is made, and after these below-the-line explanatory comments are removed*).

BTW, no matter what numbers are put above for the well-documented local liabilities, wind lobbyists will object to them. If local representatives don't like the estimates citizens come up with, then they should provide their own *objective* and *comprehensive* **net local financial analysis**.

As explained on the Winning page outline of our website, the final objective is to get local legislators to pass the most protective local wind ordinance they are legally allowed to do (e.g. here). They will be much more inclined to do that after they have seen a realistic assessment of the **net local economic impact**. The net annual financial number (*in this casee: – $6.5 Million*) should be the citizens' primary focus.

For questions about this document, or to make suggestions for improvements, please contact John Droz at "aaprjohn" @ "northnet" dot "org".